A MODERN APPROACH TO VERBAL & NON VERBAL REASONING

A MODERN APPROACH TO VERBAL & NON VERBAL REASONING

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M.Sc., Ph.D.

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1. SERIES

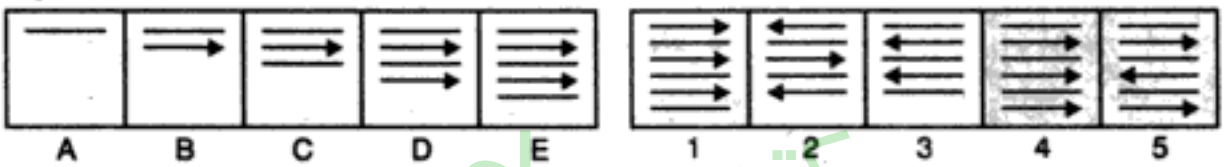
This chapter deals with the problems based upon continuation of figures. There are various types of problems on series, but the theme in each of these is the same. There is a sequence of figures depicting a change step by step. Either one of these figures is out of order and has to be omitted or a figure has to be selected from a separate set of figures, which would continue the sequence.

TYPE 1 : FIVE FIGURE SERIES

This type of problems on series consist of five figures numbered A, B, C, D, and E forming the problem Set, followed by five other figures numbered 1, 2, 3, 4 and 5 forming the Answer Set. The five consecutive problem figures form a definite sequence and it is required to choose one of the figures from the Answer Set which will continue the same sequence.

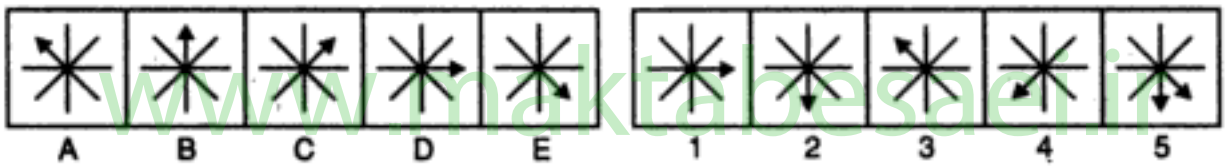
In each of the following examples find the figure from the Answer Set (i.e. figs. 1, 2, 3, 4 and 5) which will continue the series given in the Problem Set (i.e. figs. A, B, C, D, and E).

Example 1 : PROBLEM FIGURES ANSWER FIGURES



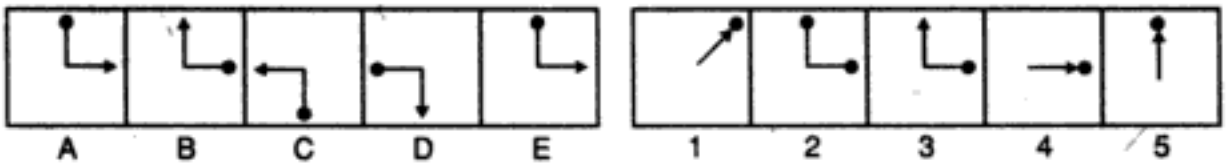
Solution : Clearly, arrows and straight lines are added alternately to get subsequent figures. Also all the arrows point towards the right. Hence, fig. (4) is the answer.

Example 2 : PROBLEM FIGURES ANSWER FIGURES



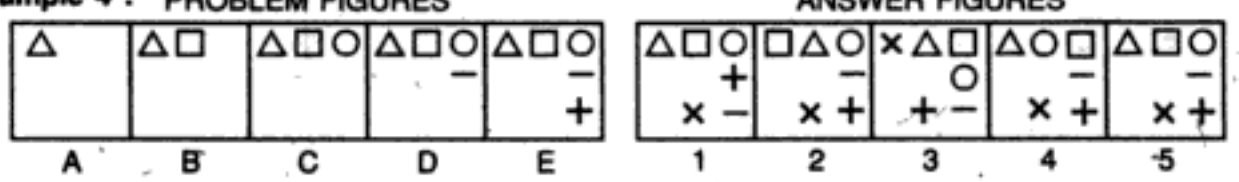
Solution : Here, the arrow rotates one step clockwise in every subsequent figure.
∴ The answer is fig. (2).

Example 3 : PROBLEM FIGURES ANSWER FIGURES



Solution : In this case, the pin rotates 90° clockwise and the arrow rotates 90° anticlockwise in each step.
Hence, the answer is fig. (3).

Example 4 : PROBLEM FIGURES ANSWER FIGURES

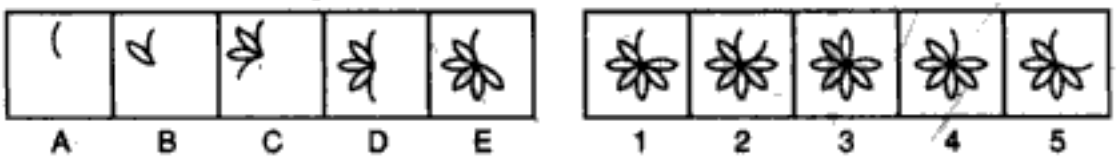


Solution : New symbols are added in each step in a set order.
Hence, the answer is fig. (5).

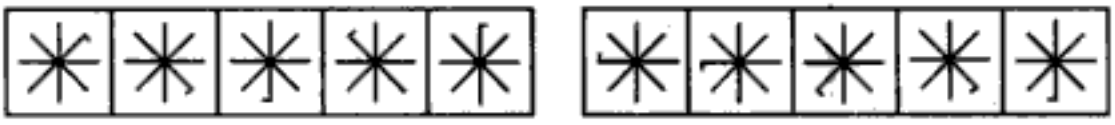
EXERCISE 1A

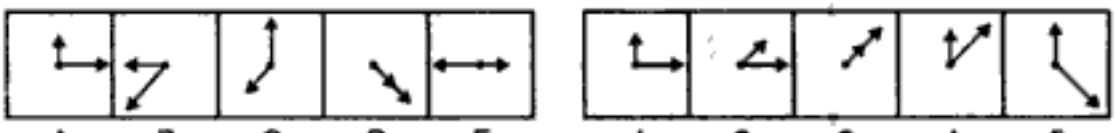
Directions : *Each of the following questions consists of five figures marked A, B, C, D and E called the Problem Figures followed by five other figures marked 1, 2, 3, 4 and 5 called the Answer Figures. Select a figure from amongst the Answer Figures which will continue the same series as established by the five Problem Figures.*

Problem Figures | Answer Figures

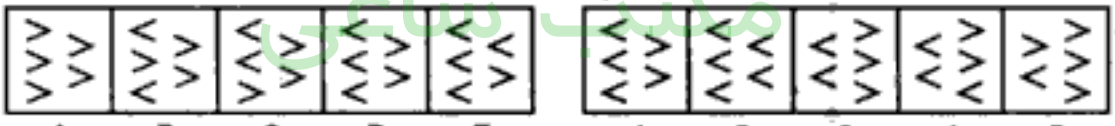
1. 

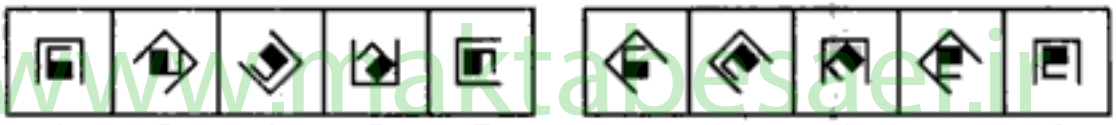
(B.S.R.B. 1992)

2. 

3. 

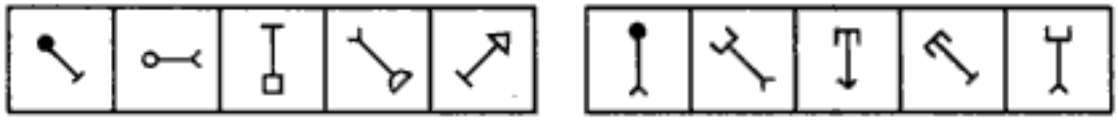
(B.S.R.B. 1994)

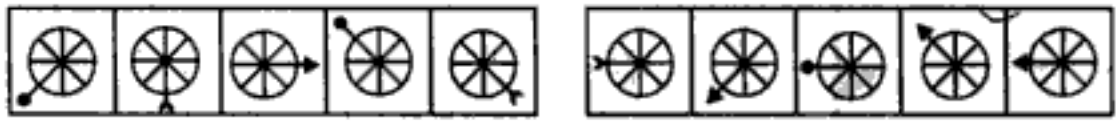
4. 

5. 

6. 

(S.B.I. P.O. 1991)

7. 

8. 

9. 

(NABARD, 1991)

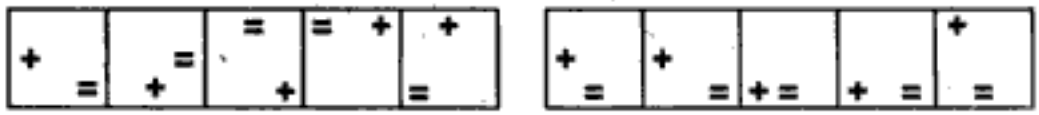
Problem Figures **Answer Figures**

10.

11.

(B.S.R.B. 1992)

12.



13.

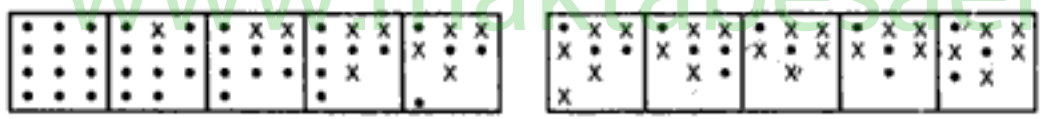
(Bank P.O. 1993)

14.

15.

(S.B.I. P.O. 1992)

16.



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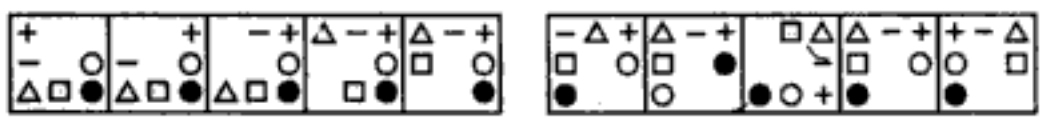

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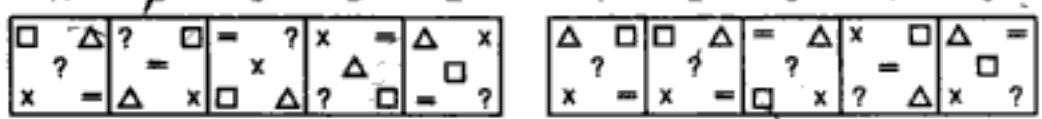

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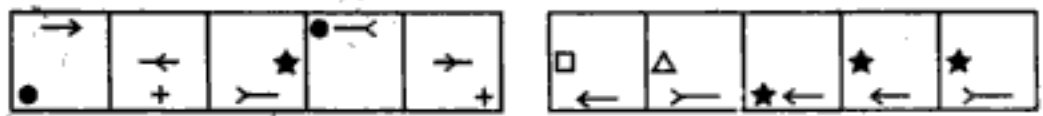

(Bank P.O. 1994)

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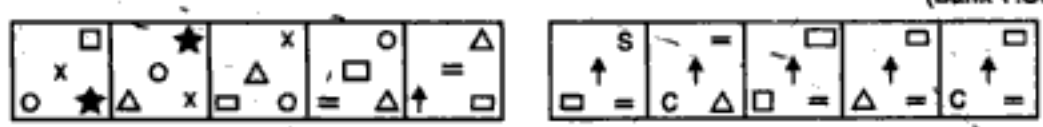

Problem Figures | Answer Figures

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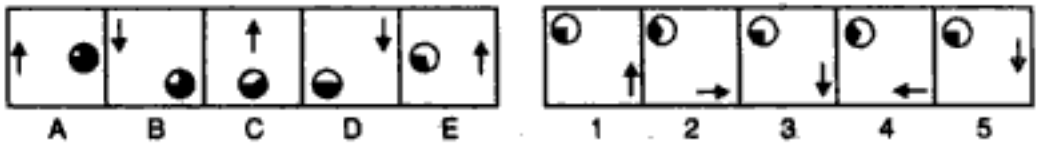

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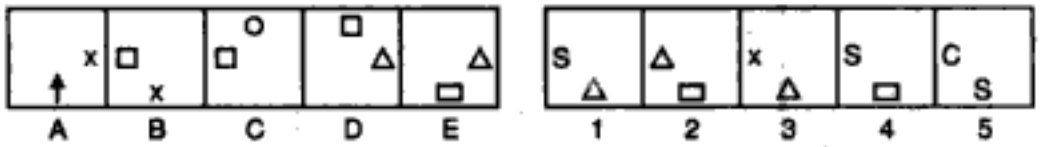

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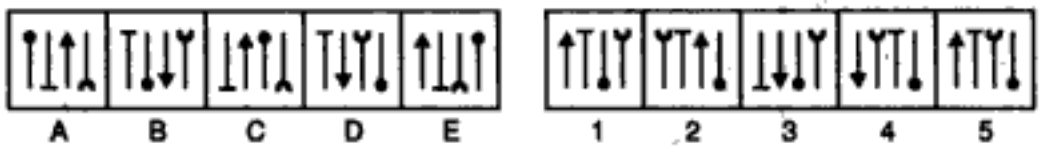

(B.S.R.B. 1994)

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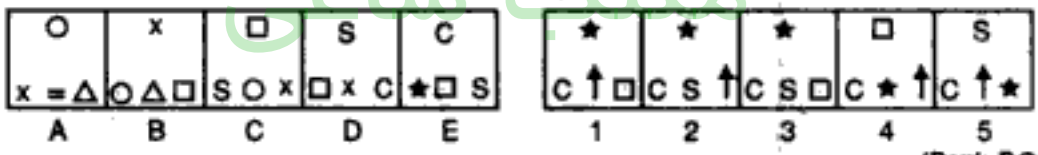

(Bank P.O. 1993)

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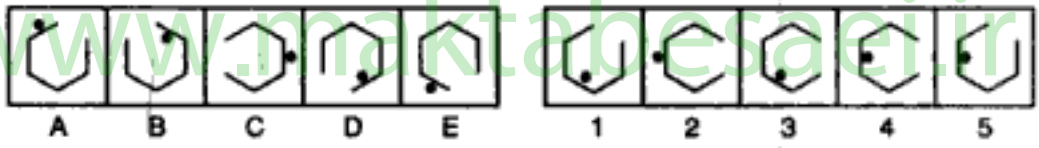

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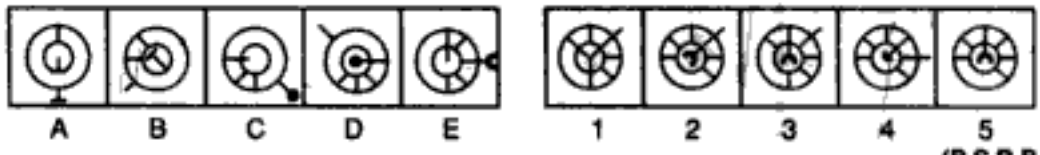

(B.S.R.B. 1995)

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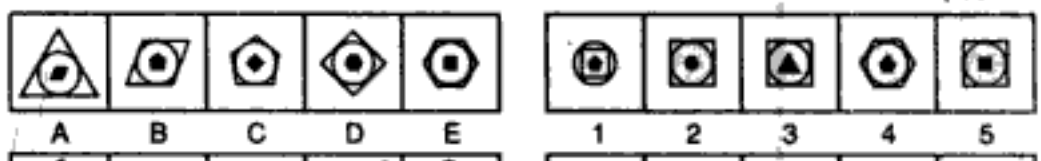

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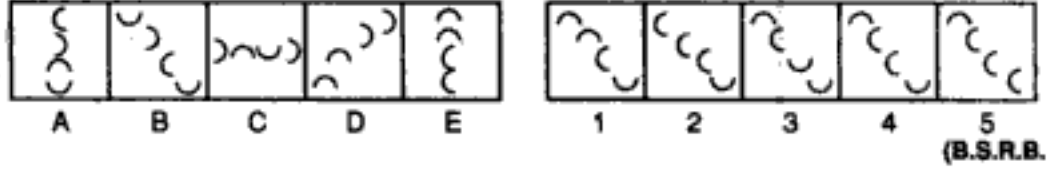

(B.S.R.B. 1994)

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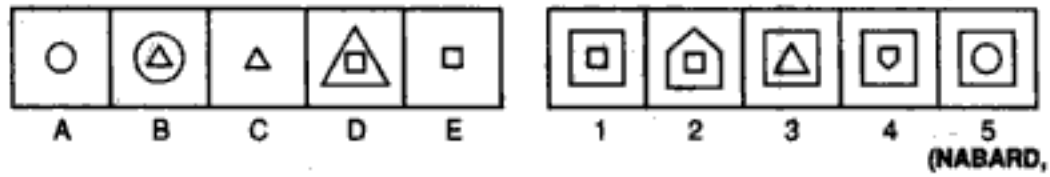

(NABARD, 1991)

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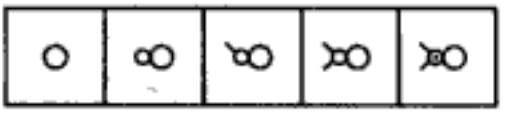
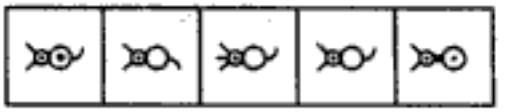
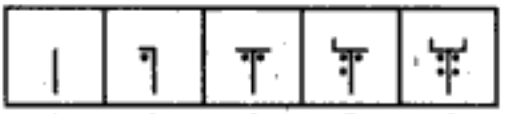
32.	 A B C D E	 1 2 3 4 5
33.	 A B C D E	 1 2 3 4 5
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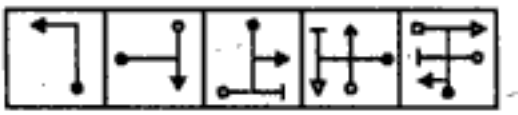
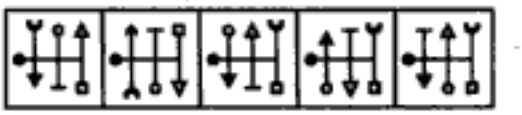
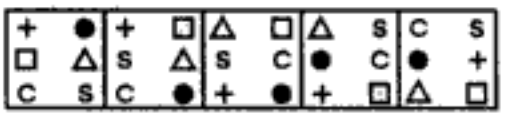
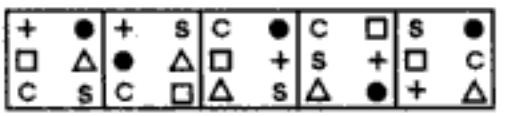
34.	 A B C D E	 1 2 3 4 5
35.	 A B C D E	 1 2 3 4 5
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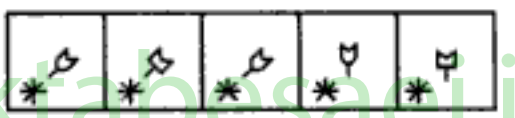
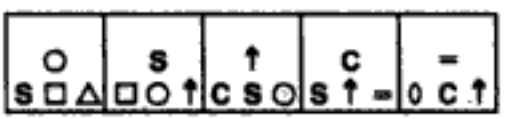
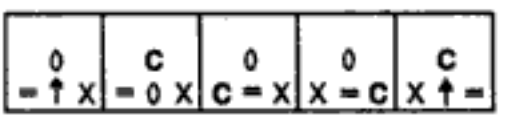
37.	 A B C D E	 1 2 3 4 5
38.	 A B C D E	 1 2 3 4 5
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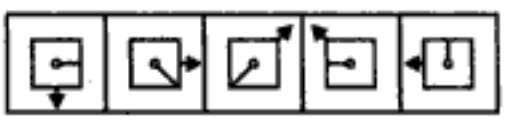
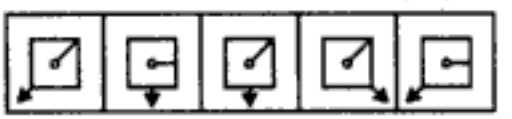
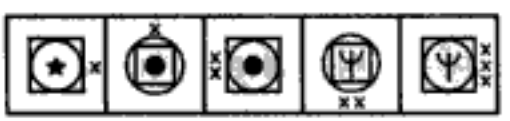
39.	 A B C D E	 1 2 3 4 5
40.	 A B C D E	 1 2 3 4 5
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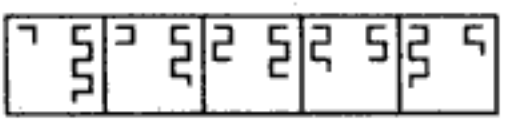
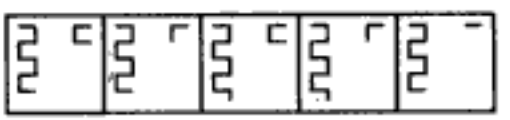
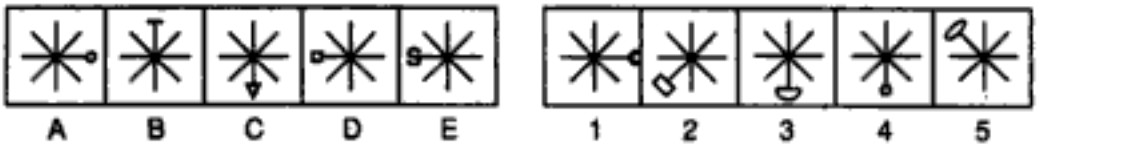
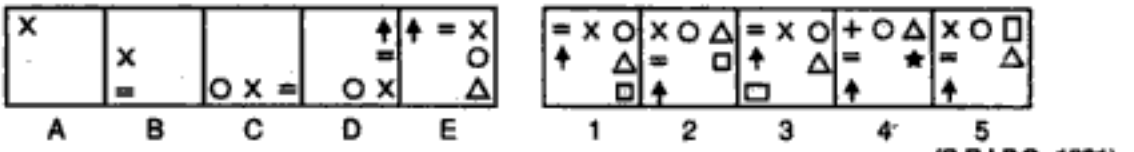
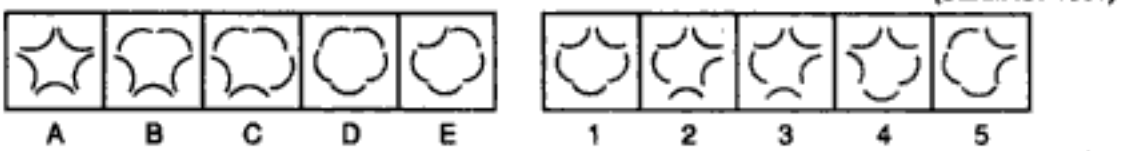
41.	 A B C D E	 1 2 3 4 5

Problem Figures **Answer Figures**

53. 

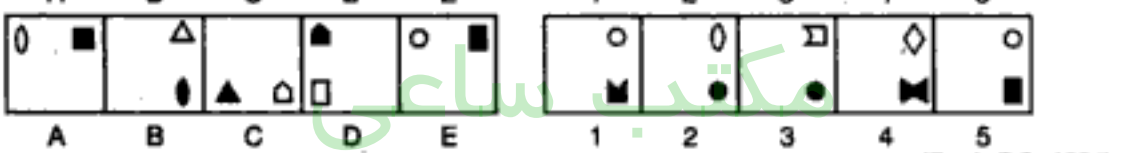
54. 

(S.B.I.P.O. 1991)

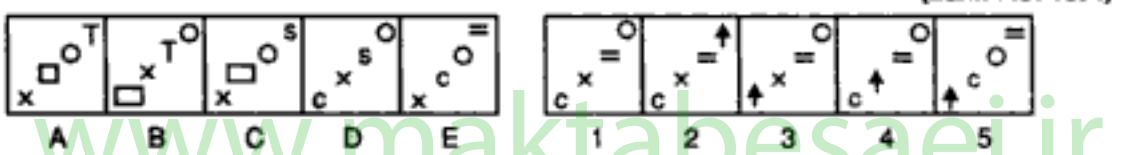
55. 

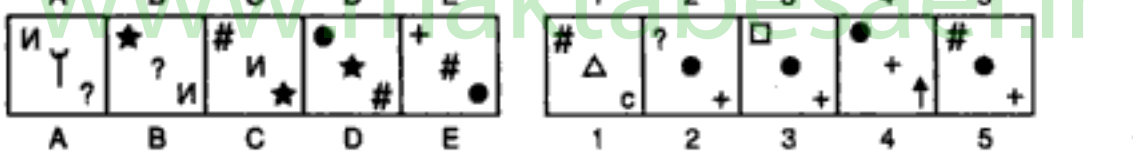
(B.S.R.B. 1993)

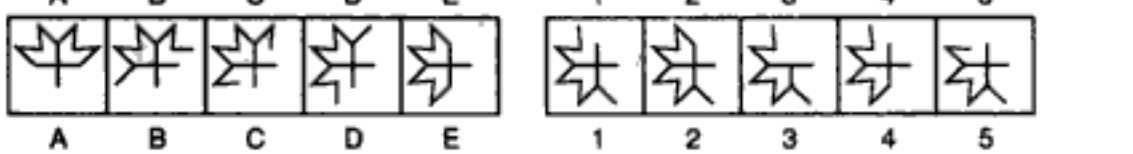
56. 

57. 

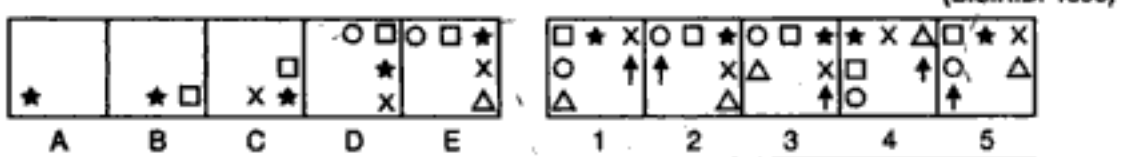
(Bank P.O. 1994)

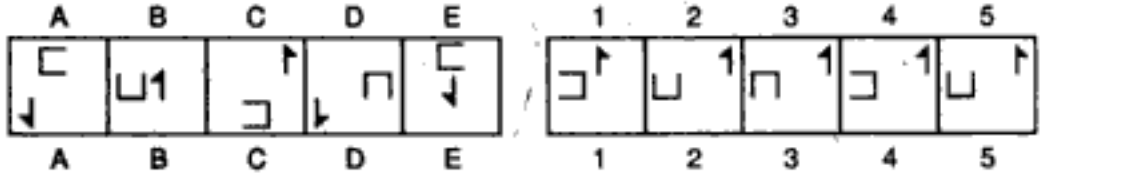
58. 

59. 

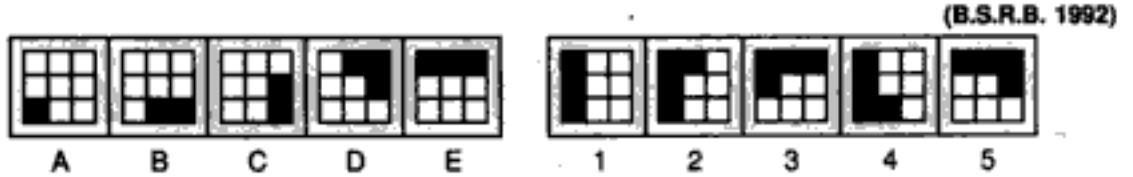
60. 

(B.S.R.B. 1993)

61. 

62. 

(B.S.R.B. 1992)

63. 

Problem Figures **Answer Figures**

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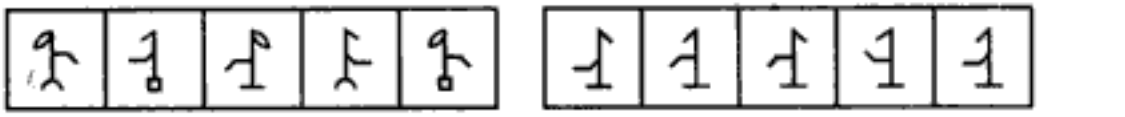

(Bank P.O. 1993)

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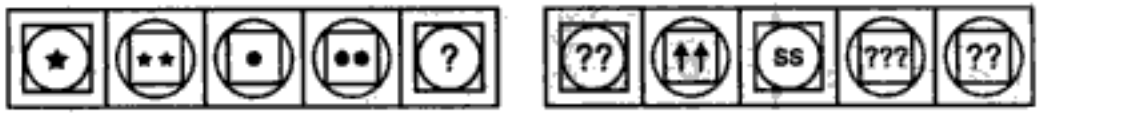

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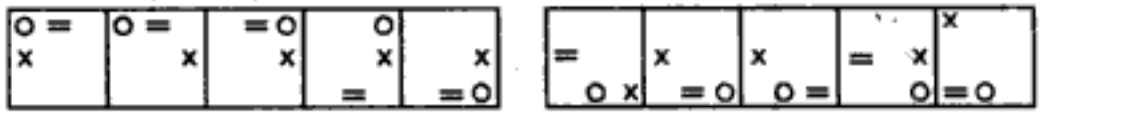
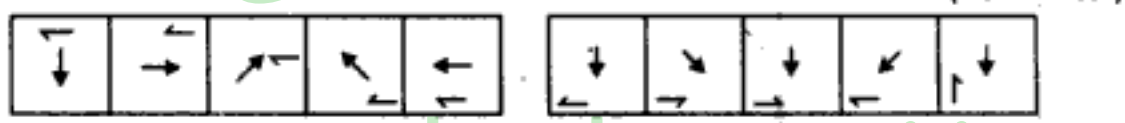


(B.S.R.B. 1994)

67.

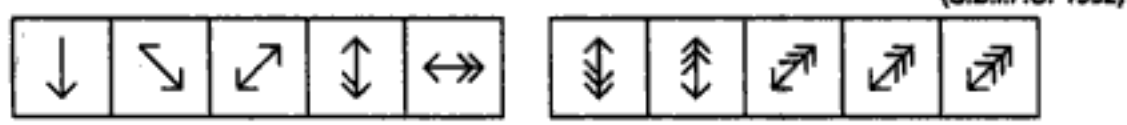

68.


(B.S.R.B. 1996)

69.


70.


(S.B.I.P.O. 1992)

71.


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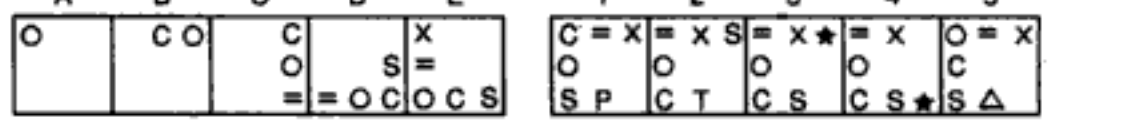
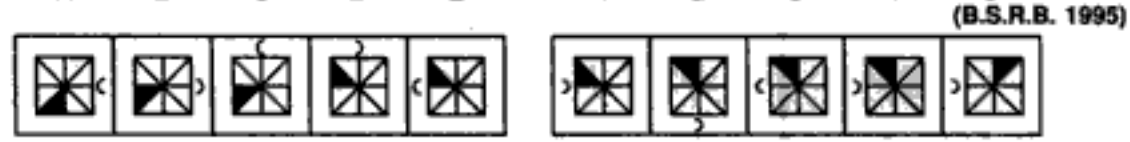


(B.S.R.B. 1995)

73.


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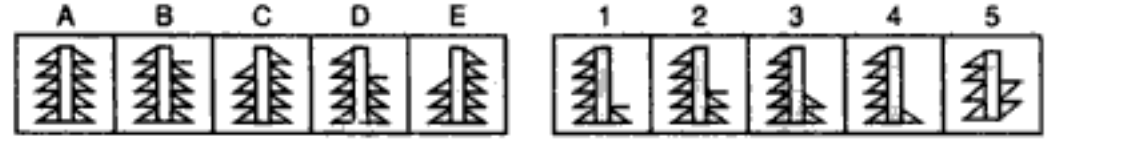

(B.S.R.B. 1995)

Problem Figures **Answer Figures**

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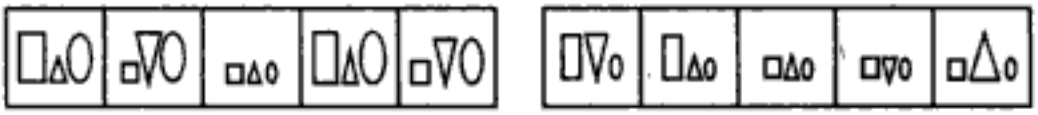
A B C D E 1 2 3 4 5
(B.S.R.B. 1996)

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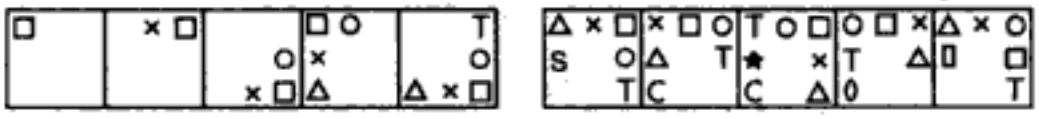

A B C D E 1 2 3 4 5
(Bank P.O. 1996)

88.

A B C D E 1 2 3 4 5

89.

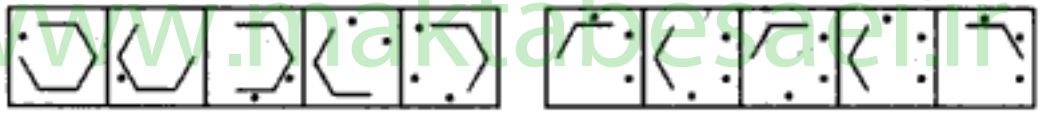
A B C D E 1 2 3 4 5

90.

A B C D E 1 2 3 4 5

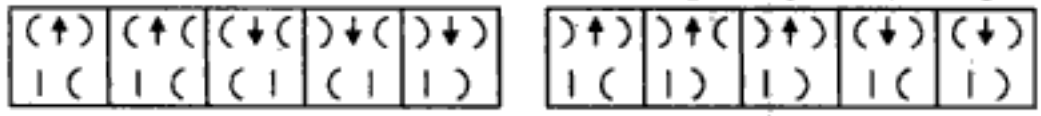
91.

A B C D E 1 2 3 4 5
(Bank P.O. 1994)

92.

A B C D E 1 2 3 4 5
(B.S.R.B. 1995)

93.

A B C D E 1 2 3 4 5

94.

A B C D E 1 2 3 4 5

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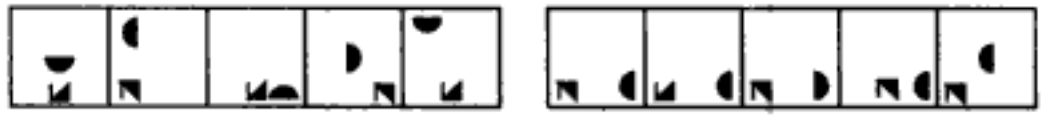
A B C D E 1 2 3 4 5
(Bank P.O. 1992)

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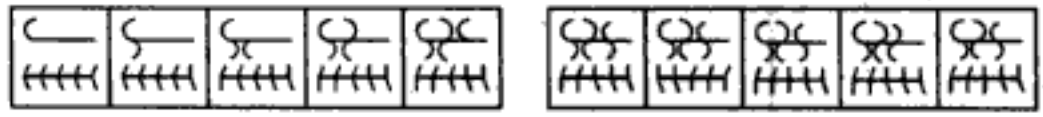
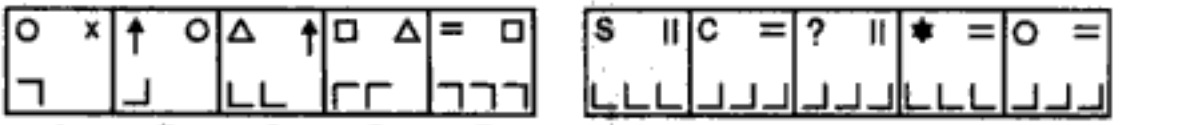

A B C D E 1 2 3 4 5

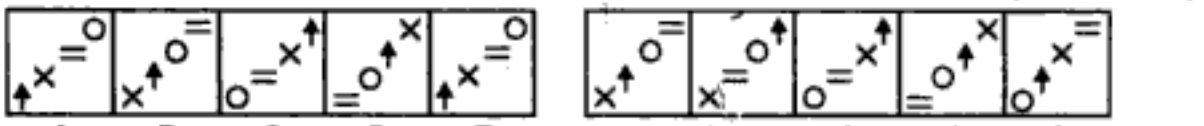
Problem Figures **Answer Figures**

97.



(B.S.R.B. 1992)

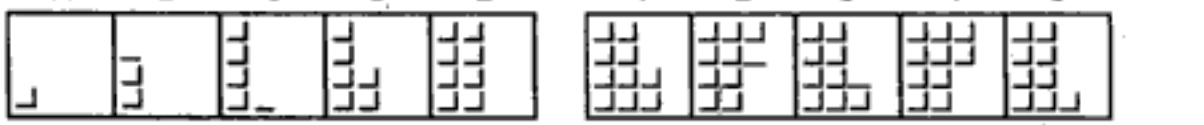
98.



(S.B.I.P.O. 1991)

99.

100.



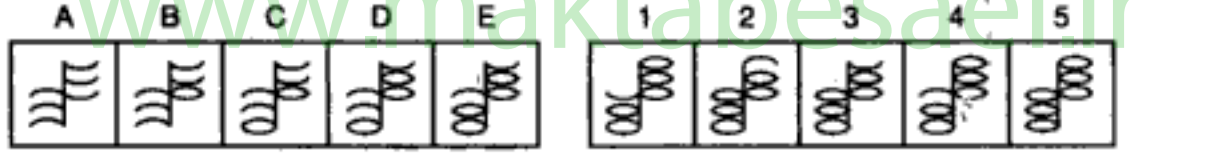
(B.S.R.B. 1995)

101.

(B.S.R.B. 1994)

102.

103.



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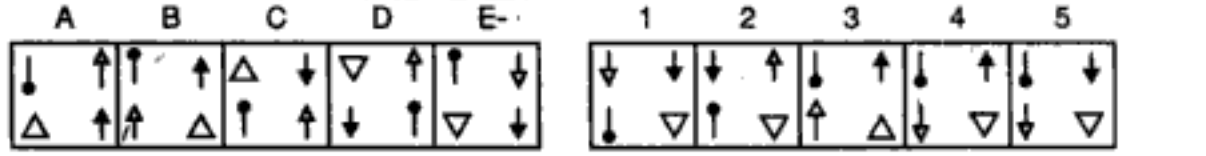

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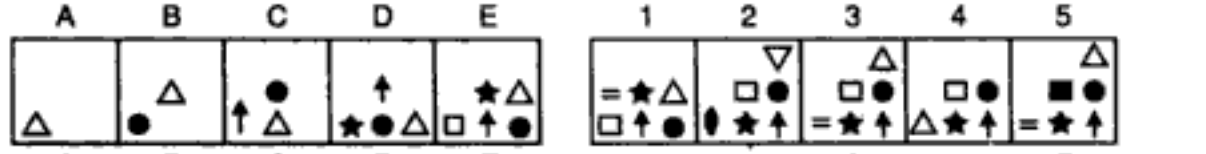
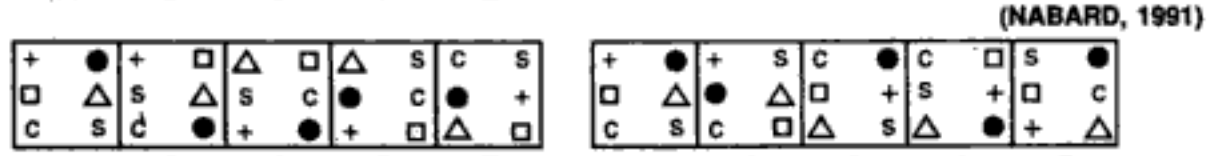


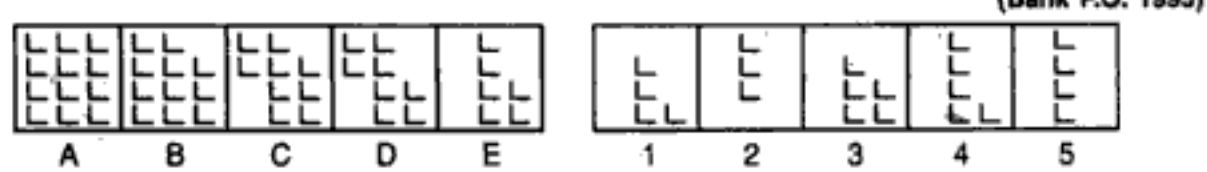
(NABARD, 1991)

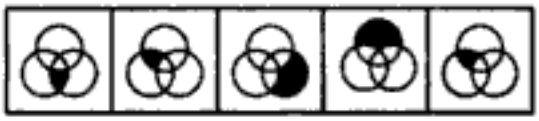
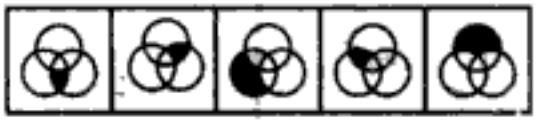
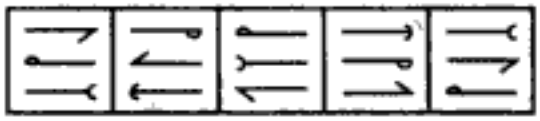
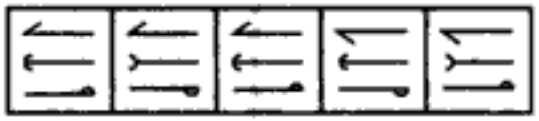
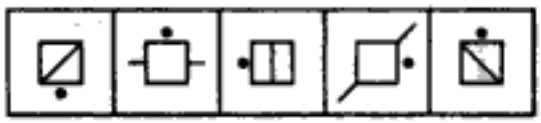
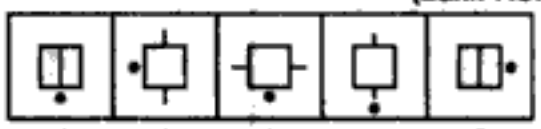
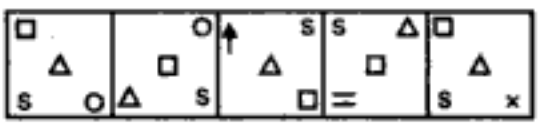
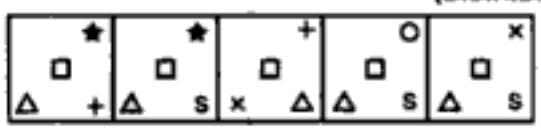
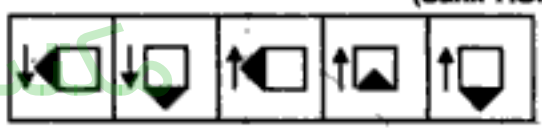
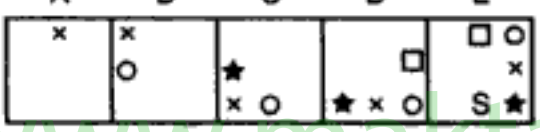
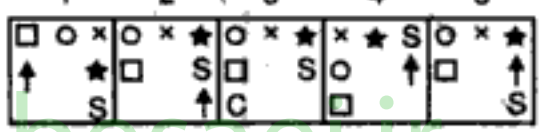
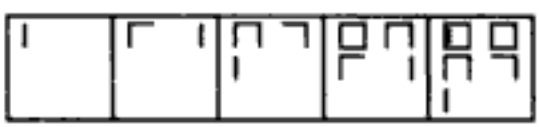
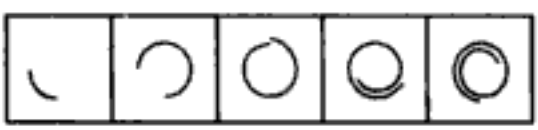
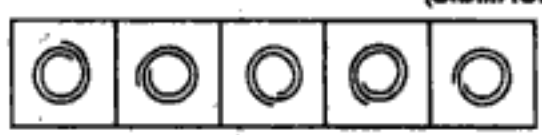
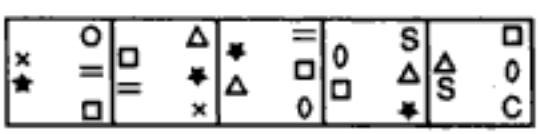
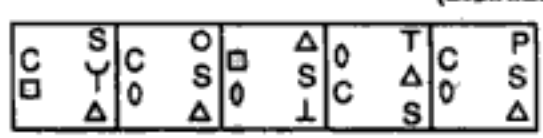
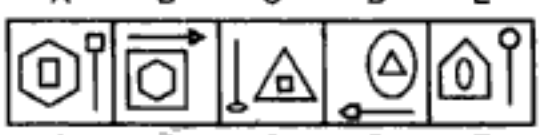
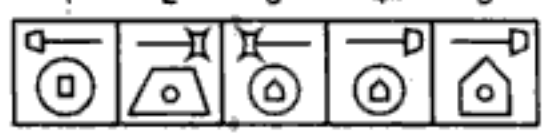
106.



(Bank P.O. 1993)

107.



	Problem Figures	Answer Figures
108.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1995)
109.	 A B C D E	 1 2 3 4 5 (Bank P.O. 1996)
110.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1996)
111.	 A B C D E	 1 2 3 4 5 (Bank P.O. 1993)
112.	 A B C D E	 1 2 3 4 5
113.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1994)
114.	 A B C D E	 1 2 3 4 5 (S.B.I.P.O. 1992)
115.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1994)
116.	 A B C D E	 1 2 3 4 5
117.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1996)

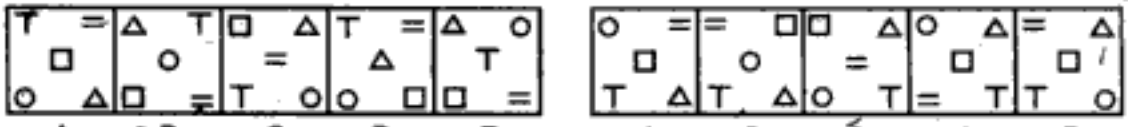
Problem Figures **Answer Figures**

183.

A B C D E 1 2 3 4 5

(Bank P.O. 1992)

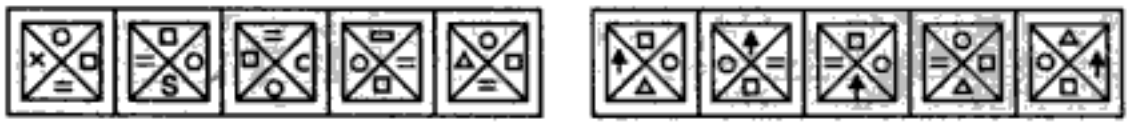
184.



A B C D E 1 2 3 4 5

(B.S.R.B. 1995)

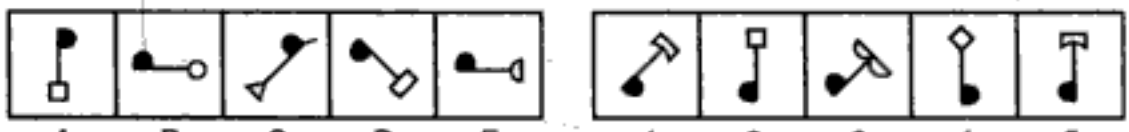
185.



A B C D E 1 2 3 4 5

(S.B.I.P.O. 1992)

186.



A B C D E 1 2 3 4 5

187.

A B C D E 1 2 3 4 5

(B.S.R.B. 1994)

188.

A B C D E 1 2 3 4 5

189.

A B C D E 1 2 3 4 5

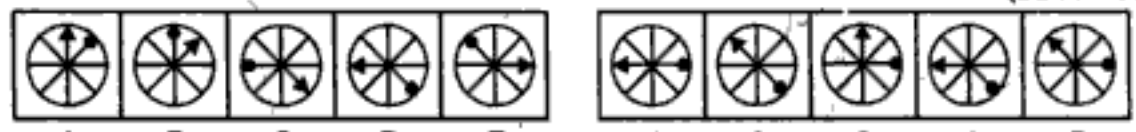
(B.S.R.B. 1995)

190.

A B C D E 1 2 3 4 5

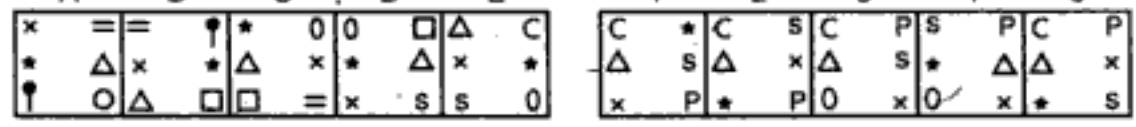
(Bank P.O. 1993)

191.



A B C D E 1 2 3 4 5

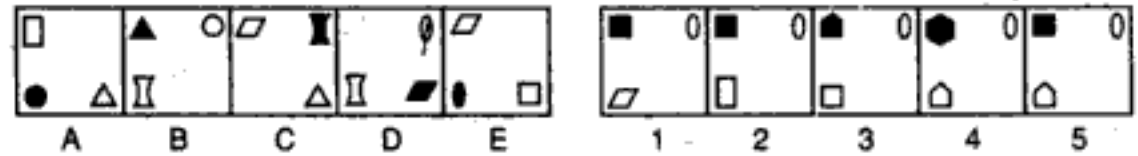
192.



A B C D E 1 2 3 4 5

(Bank P.O. 1994)

193.



A B C D E 1 2 3 4 5

Problem Figures **Answer Figures**

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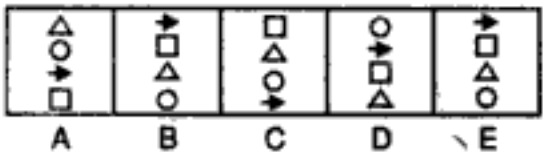

(B.S.R.B. 1994)

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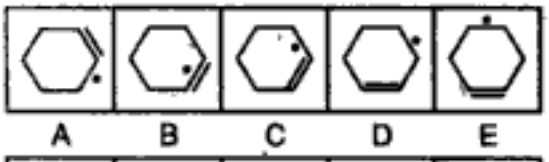

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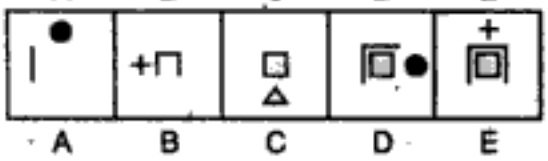

(Bank P.O. 1994)

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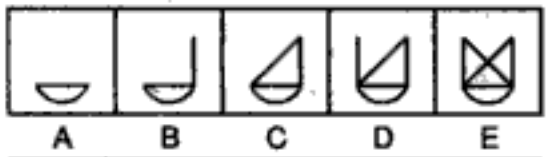

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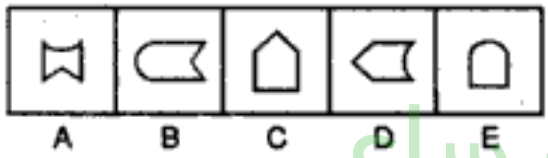

(B.S.R.B. 1996)

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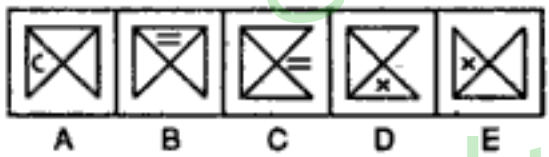

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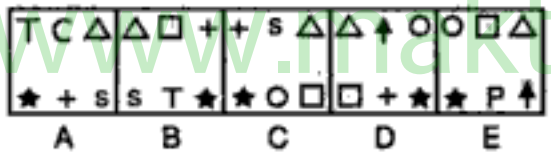

(B.S.R.B. 1995)

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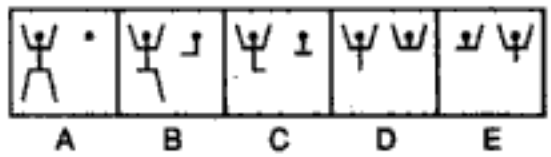

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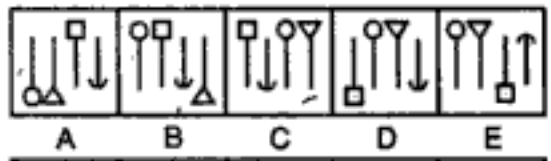

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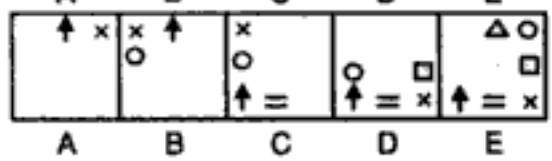

(B.S.R.B. 1992)

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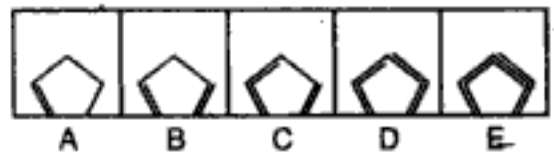
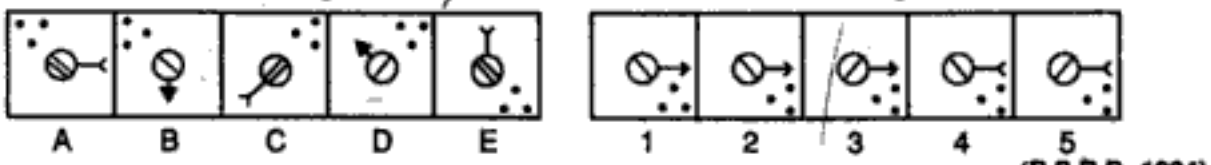
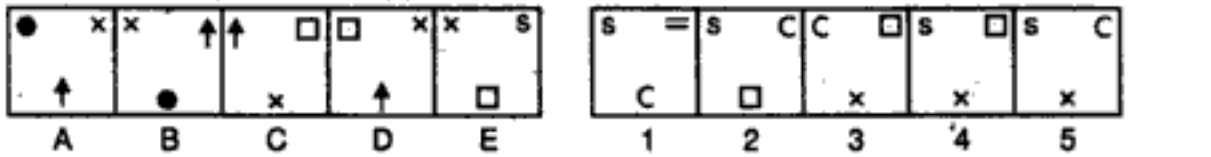
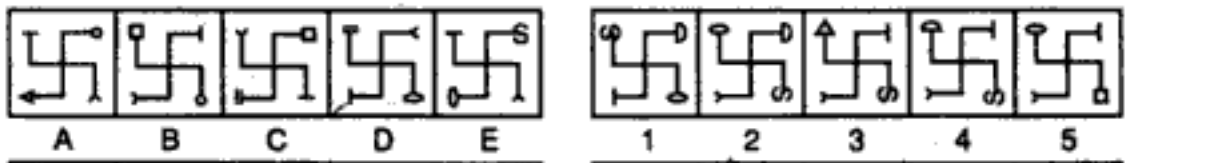


Problem Figures Answer Figures

205. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1994)

206. 
A B C D E 1 2 3 4 5

207. 
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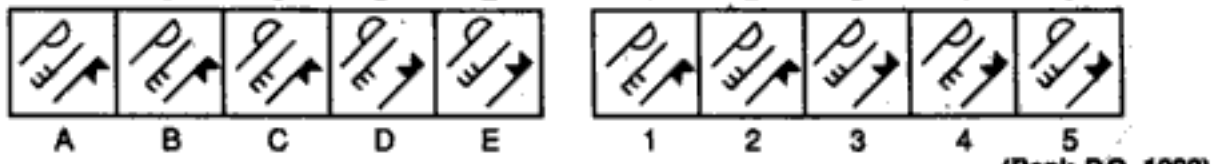
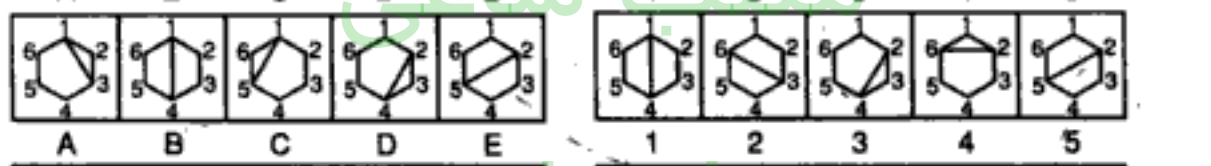
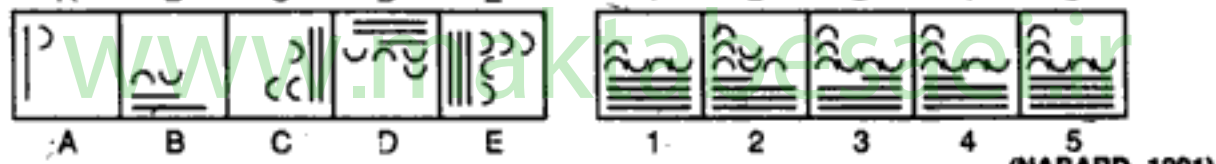
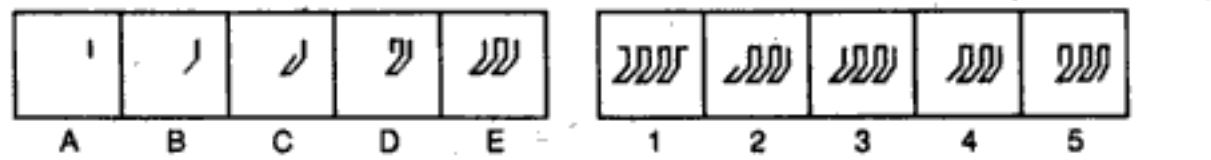
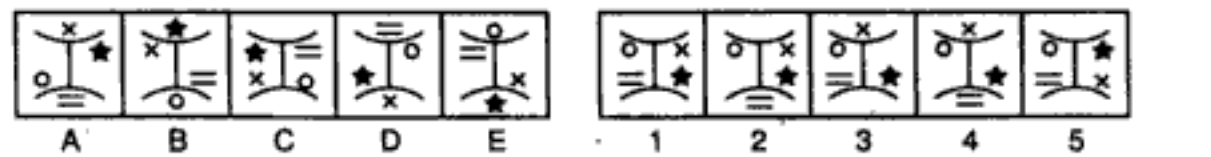
208. 
A B C D E 1 2 3 4 5
(Bank P.O. 1992)

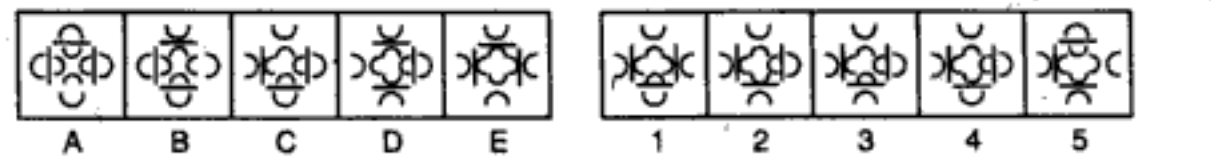
209. 
A B C D E 1 2 3 4 5

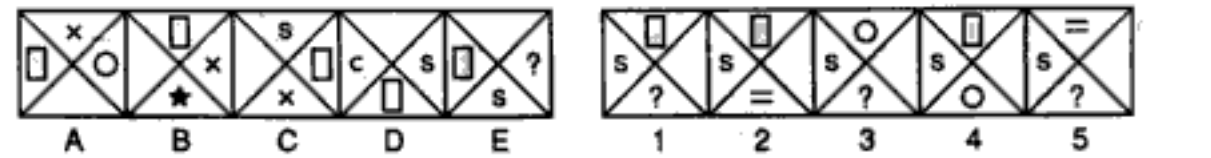
210. 
A B C D E 1 2 3 4 5

211. 
A B C D E 1 2 3 4 5
(NABARD, 1991)

212. 
A B C D E 1 2 3 4 5

213. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1995)

214. 
A B C D E 1 2 3 4 5

215. 
A B C D E 1 2 3 4 5

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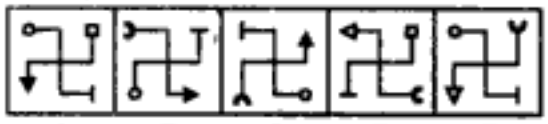

(B.S.R.B. 1993)

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240.


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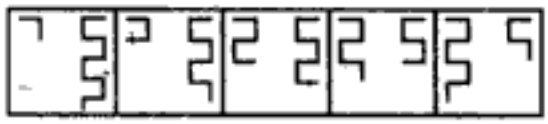

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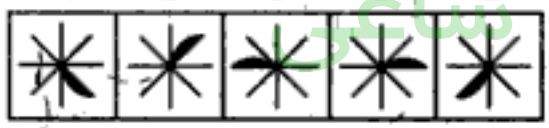

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(S.B.I. P.O. 1992)

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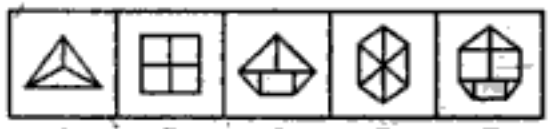

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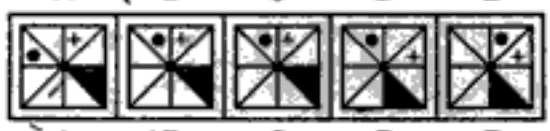

(Bank P.O. 1993)

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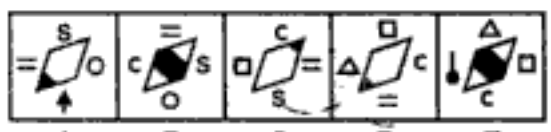

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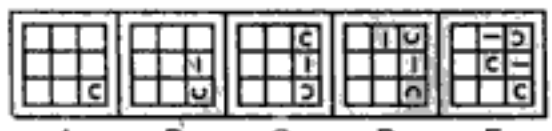

(B.S.R.B. 1994)

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Problem Figures **Answer Figures**

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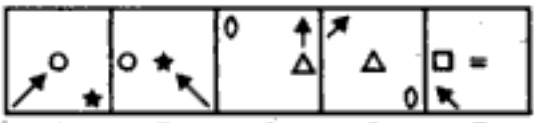
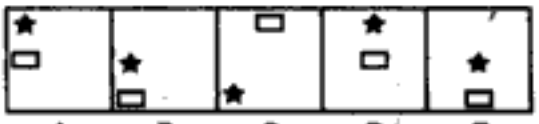


A B C D E 1 2 3 4 5

(B.S.R.B. 1996)

283.



A B C D E 1 2 3 4 5

284.

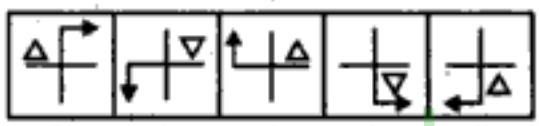
A B C D E 1 2 3 4 5

(B.S.R.B. 1993)

285.

A B C D E 1 2 3 4 5

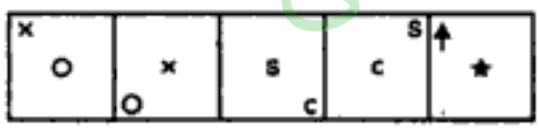
286.



A B C D E 1 2 3 4 5

(NABARD, 1991)

287.



A B C D E 1 2 3 4 5

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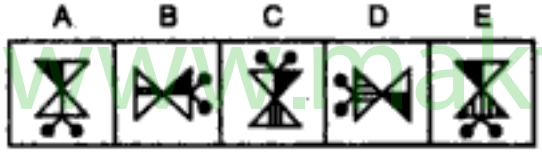
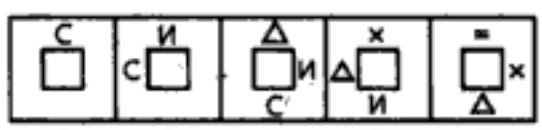


A B C D E 1 2 3 4 5

(B.S.R.B. 1996)

289.



A B C D E 1 2 3 4 5

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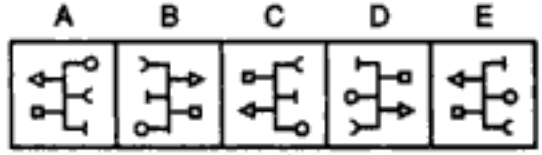


A B C D E 1 2 3 4 5

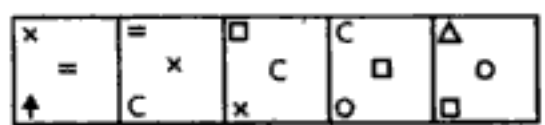
(B.S.R.B. 1994)

291.

A B C D E 1 2 3 4 5

(B.S.R.B. 1995)

292.



A B C D E 1 2 3 4 5

Problem Figures **Answer Figures**

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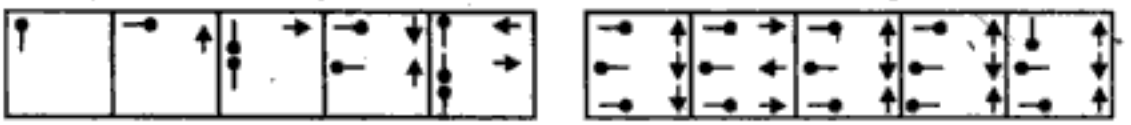

(S.B.I.P.O. 1992)

294.

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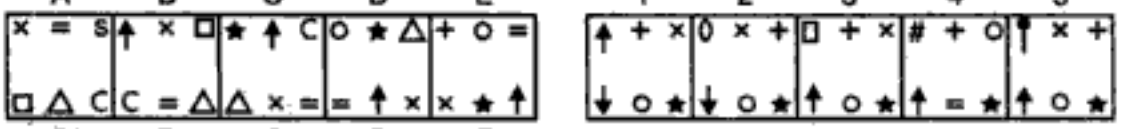

(B.S.R.B. 1994)

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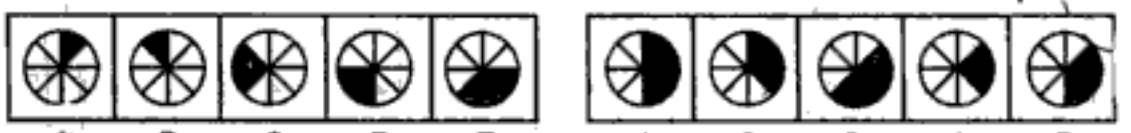

297.

(Bank P.O. 1993)

298.

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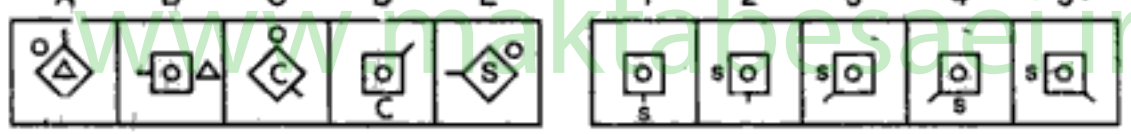

(B.S.R.B. 1996)

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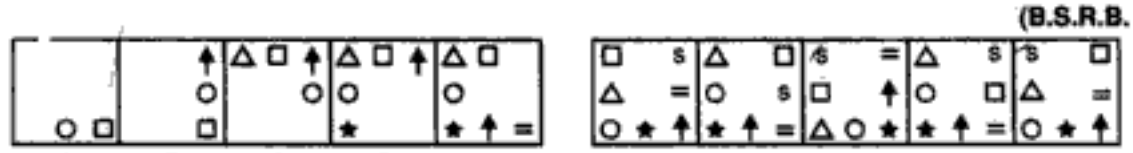

301.

(B.S.R.B. 1995)

302.

303.

(NABARD, 1991)

Problem Figures **Answer Figures**

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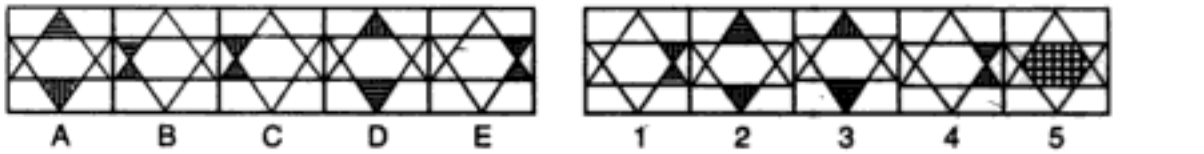

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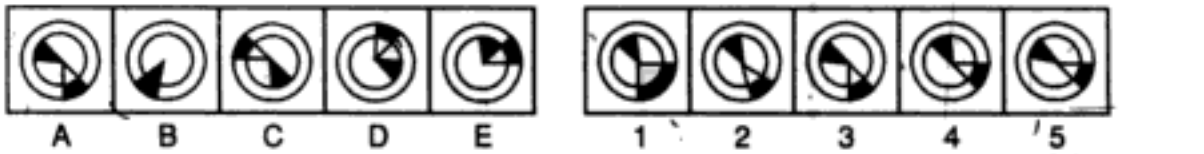

(B.S.R.B. 1993)

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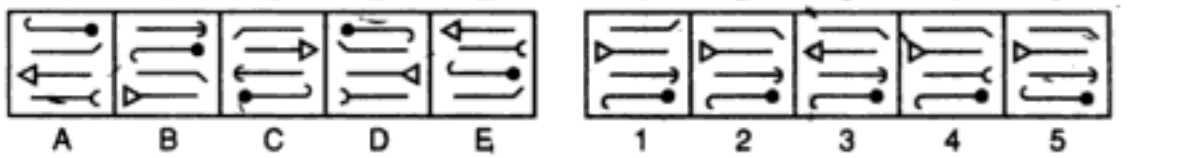

(B.S.R.B. 1996)

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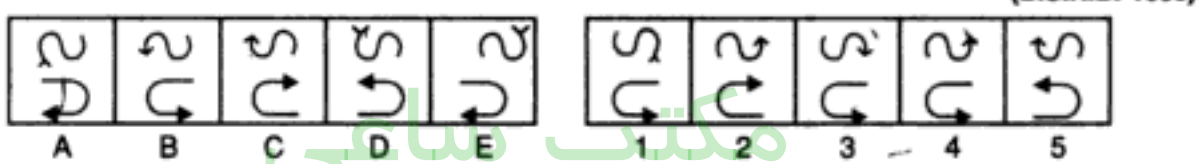

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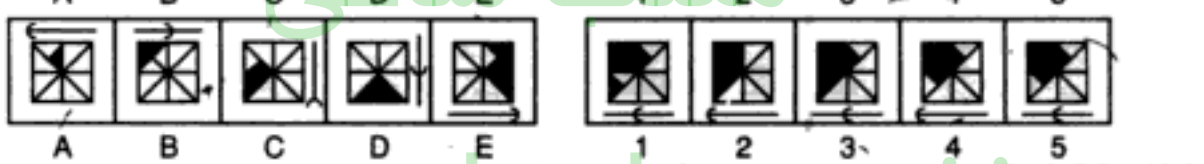

(Bank P.O. 1994)

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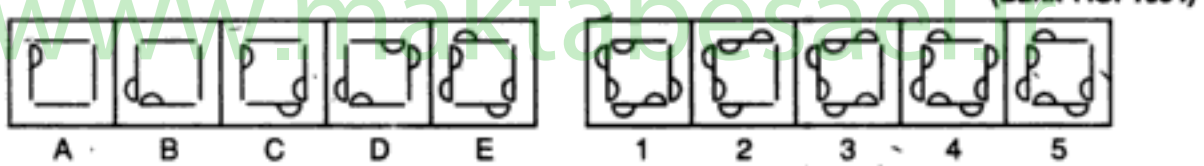

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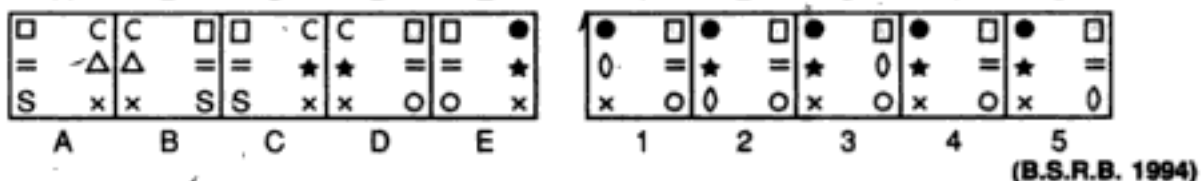

(B.S.R.B. 1994)

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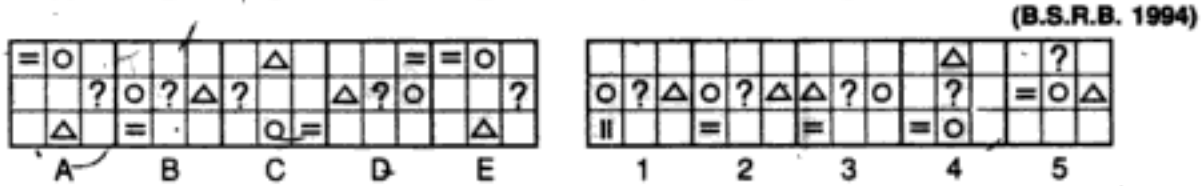

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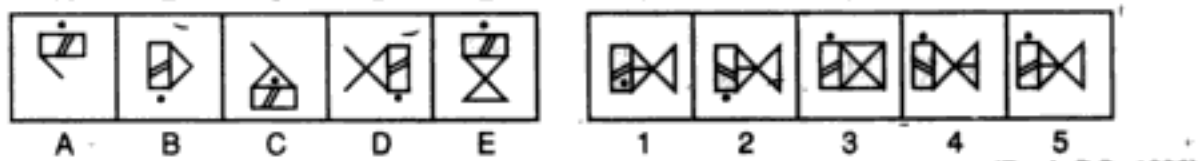

(Bank P.O. 1993)

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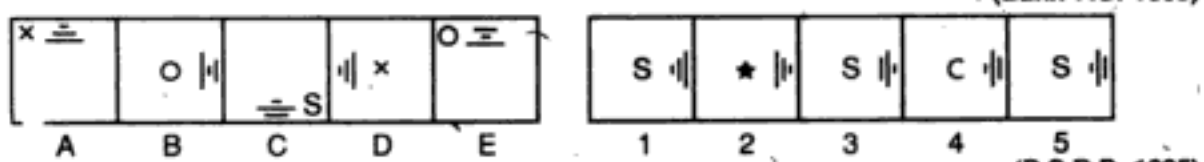

(B.S.R.B. 1995)

Problem Figures **Answer Figures**

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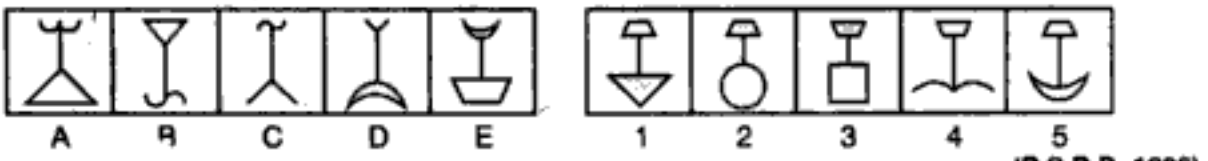

(B.S.R.B. 1996)

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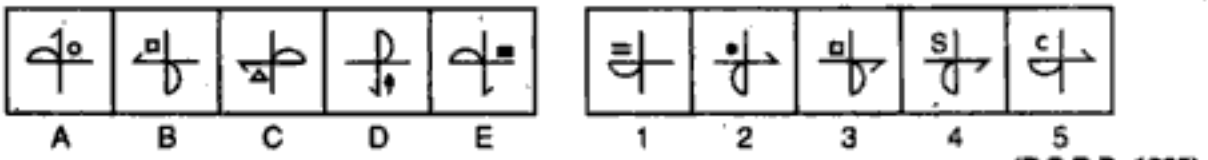
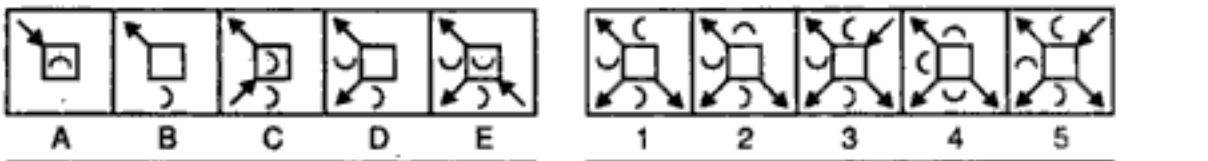
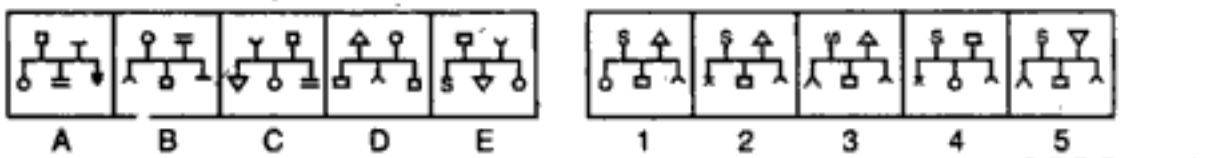


(B.S.R.B. 1995)

317.


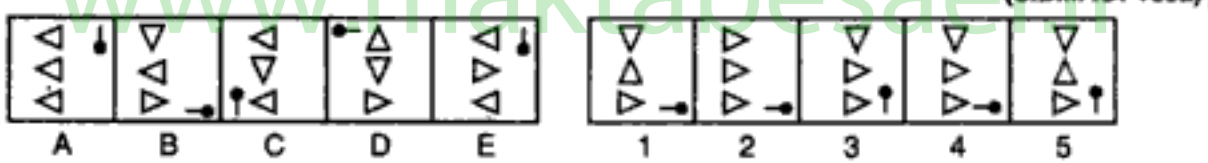
318.


(B.S.R.B. 1994)

319.


320.


(S.B.I.P.O. 1992)

321.


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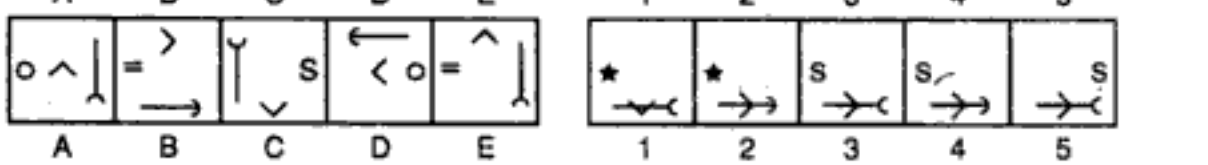
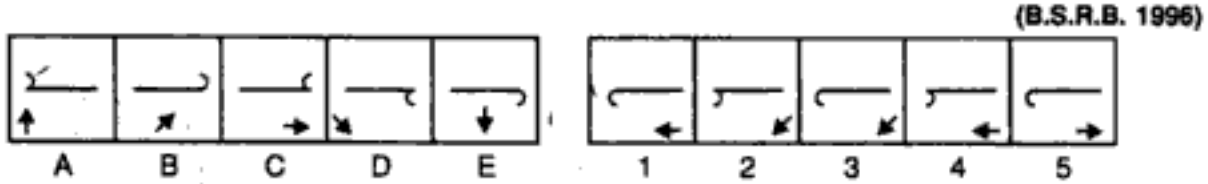


(B.S.R.B. 1996)

323.


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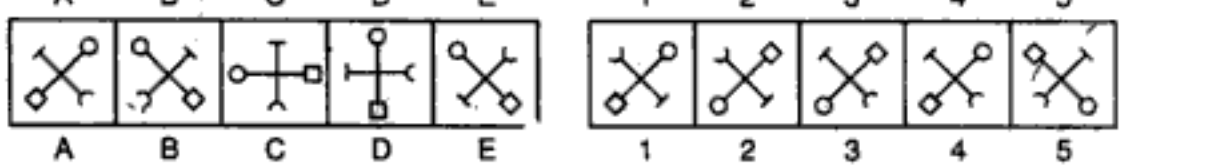
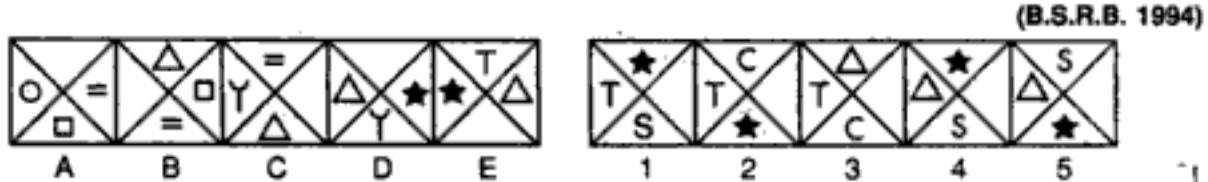


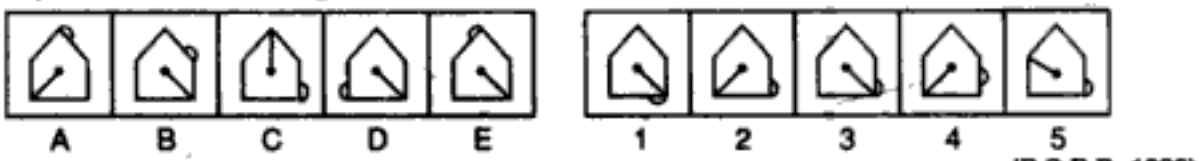
(B.S.R.B. 1994)

325.


(Bank P.O. 1996)

Problem Figures **Answer Figures**

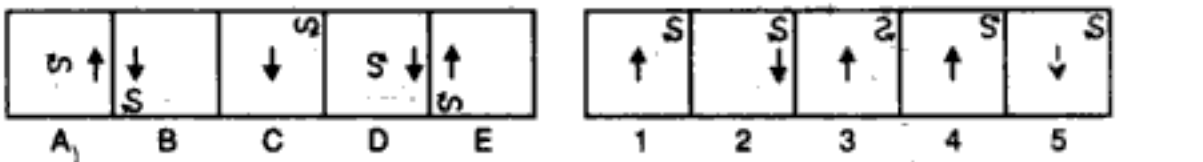
326.



A B C D E 1 2 3 4 5

(B.S.R.B. 1996)

327.



A B C D E 1 2 3 4 5

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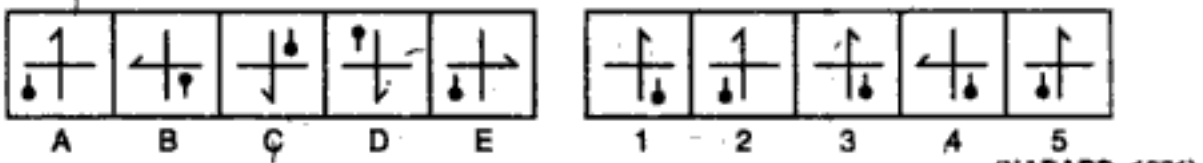
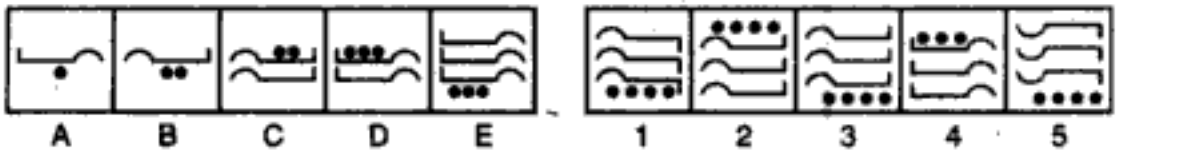


A B C D E 1 2 3 4 5

(NABARD, 1991)

329.



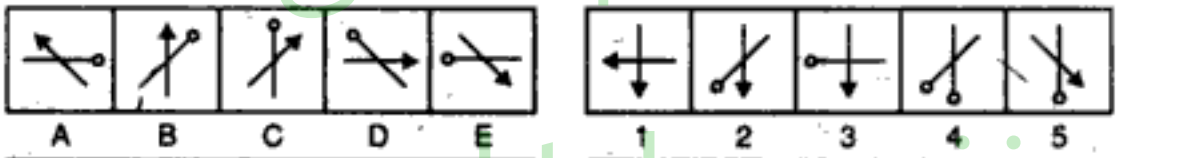
A B C D E 1 2 3 4 5

330.

A B C D E 1 2 3 4 5

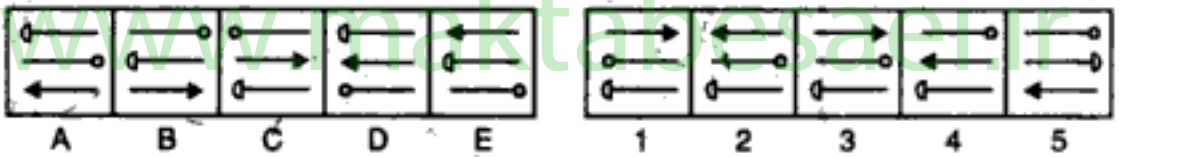
(S.B.I.P.O. 1993)

331.



A B C D E 1 2 3 4 5

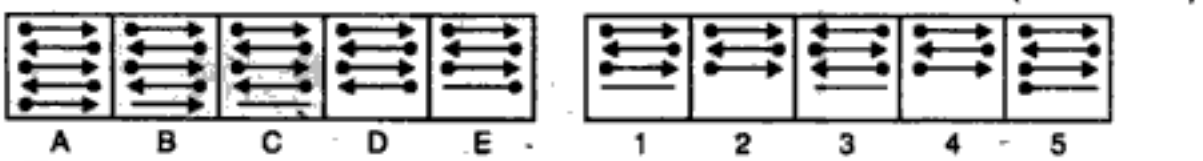
332.



A B C D E 1 2 3 4 5

(B.S.R.B. 1994)

333.



A B C D E 1 2 3 4 5

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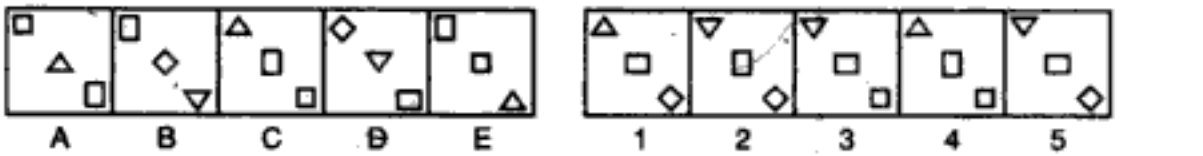
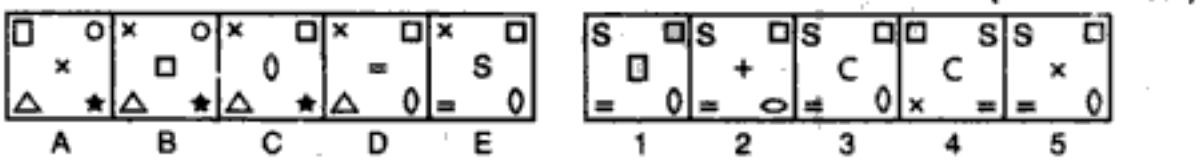


A B C D E 1 2 3 4 5

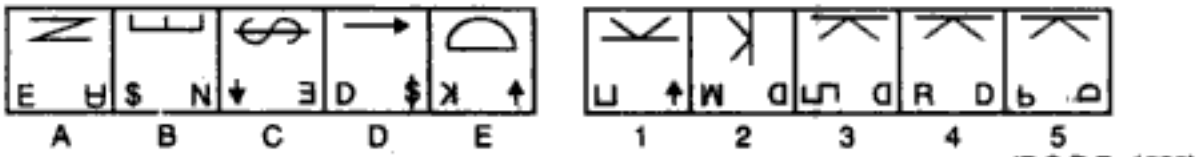
(Bank P.O. 1993)

335.



A B C D E 1 2 3 4 5

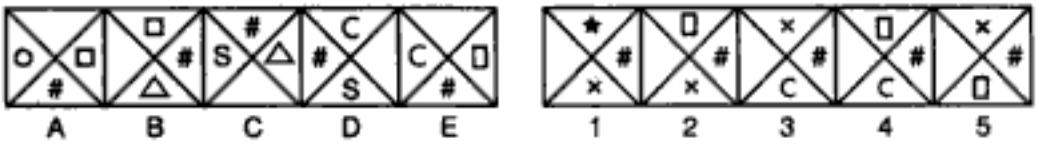
336.

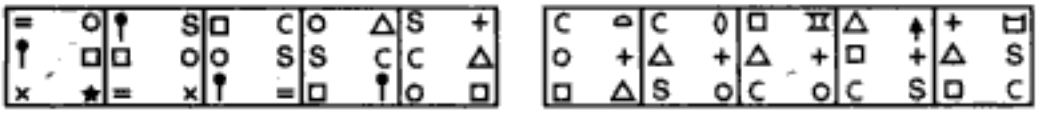


A B C D E 1 2 3 4 5

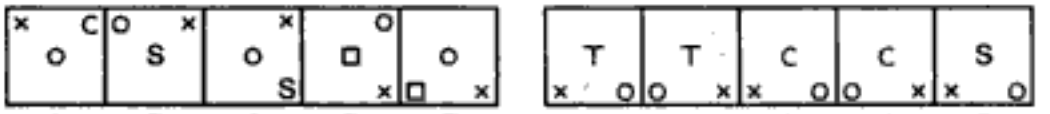
(B.S.R.B. 1993)

Problem Figures **Answer Figures**

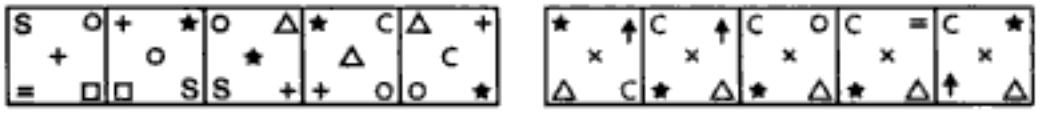
337. 

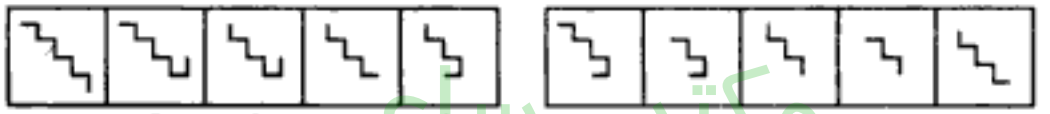
338. 

(Bank P.O. 1994)

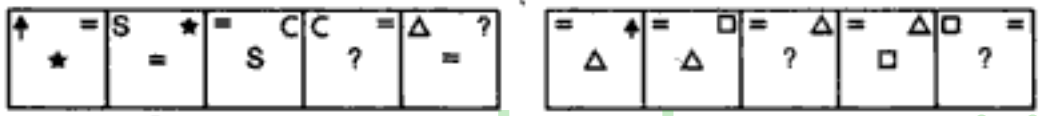
339. 

(B.S.R.B. 1996)

340. 

341. 

(Bank P.O. 1993)

342. 

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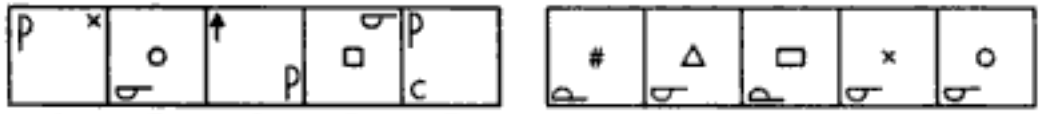
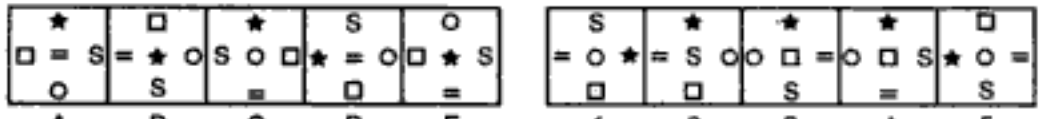
344. 

(S.B.I.P.O. 1992)

345. 

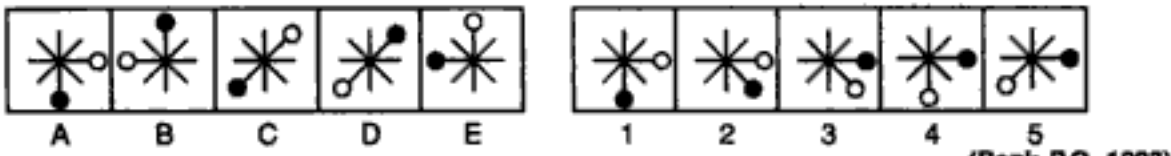
(B.S.R.B. 1996)

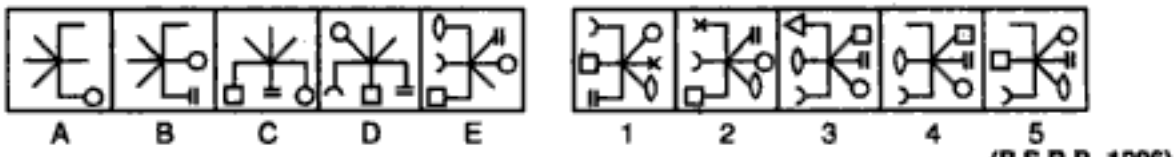
346. 

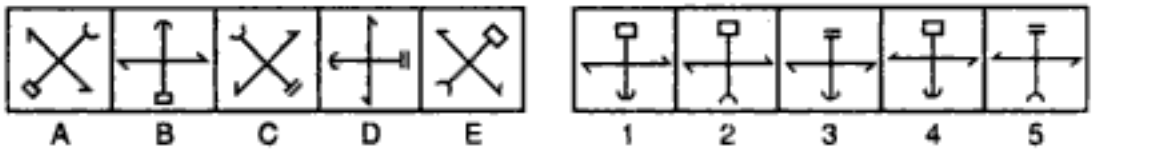
(B.S.R.B. 1995)

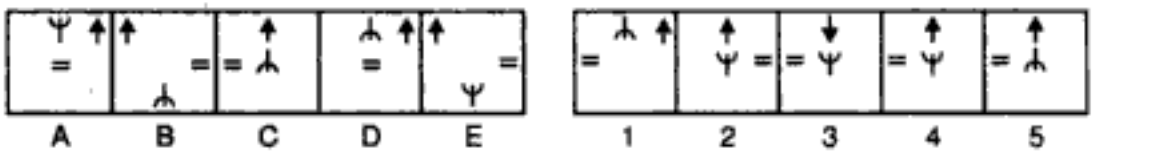
347. 

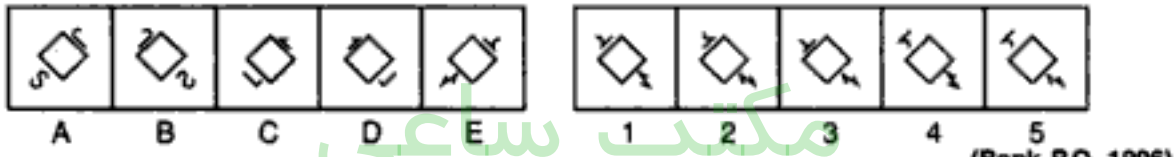
Problem Figures **Answer Figures**

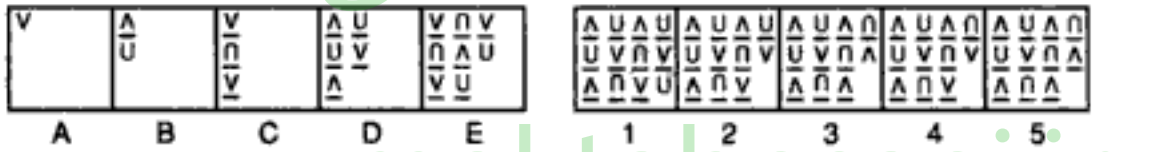
359. 
A B C D E 1 2 3 4 5
(Bank P.O. 1993)

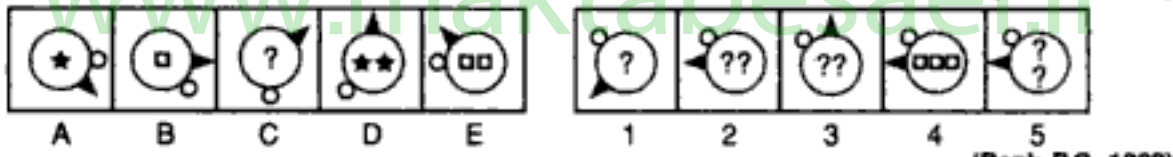
360. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1996)

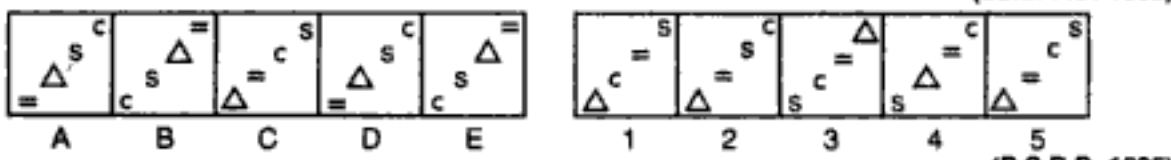
361. 
A B C D E 1 2 3 4 5

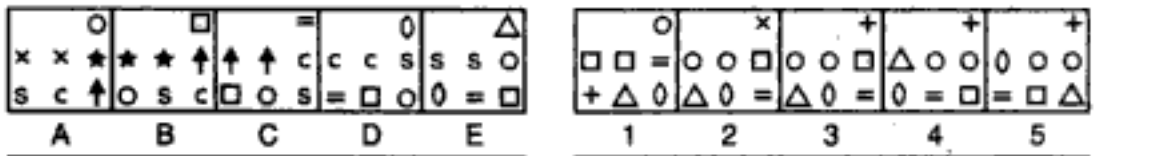
362. 
A B C D E 1 2 3 4 5

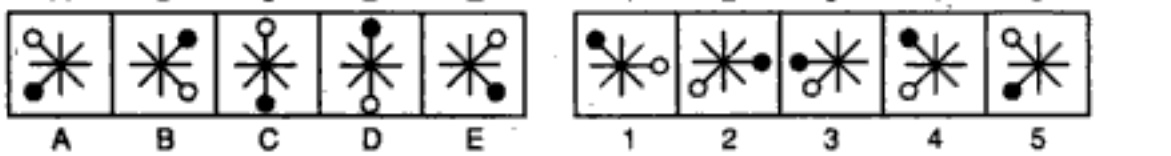
363. 
A B C D E 1 2 3 4 5
(Bank P.O. 1996)

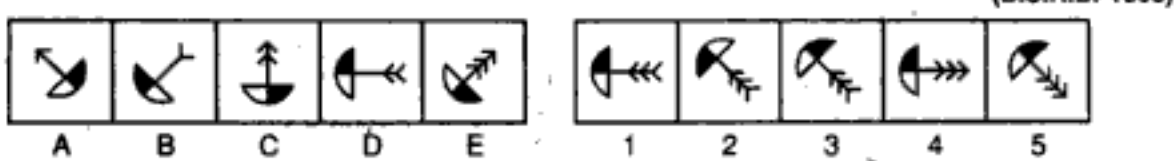
364. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1994)

365. 
A B C D E 1 2 3 4 5
(Bank P.O. 1992)

366. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1995)

367. 
A B C D E 1 2 3 4 5

368. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1995)

369. 
A B C D E 1 2 3 4 5

Problem Figures **Answer Figures**

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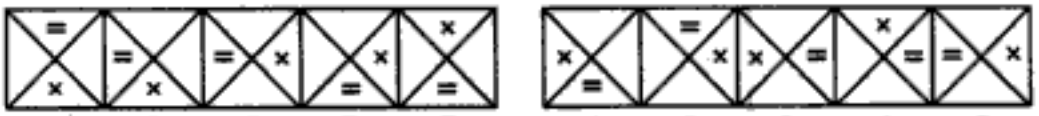

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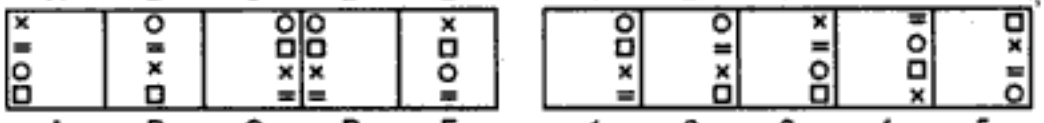

(B.S.R.B. 1993)

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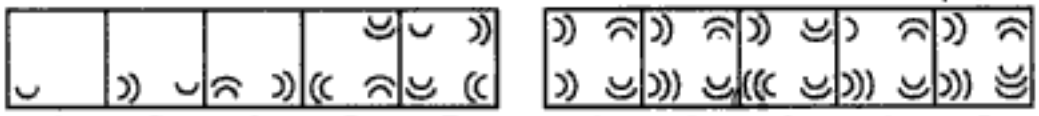

(Bank P.O. 1996)

395.


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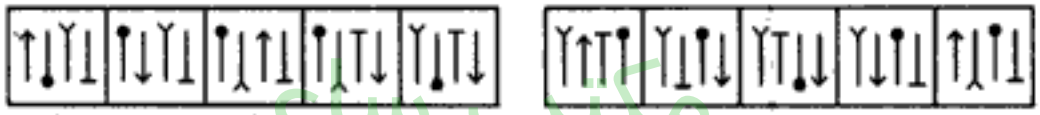

(Bank P.O. 1993)

397.


398.


(B.S.R.B. 1996)

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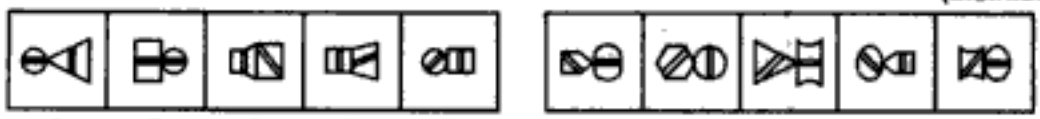

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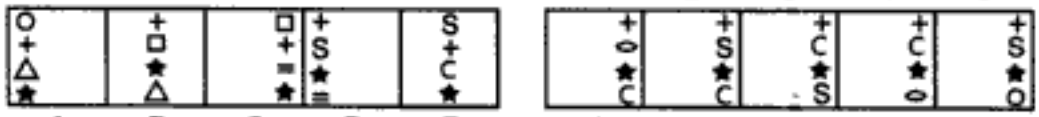
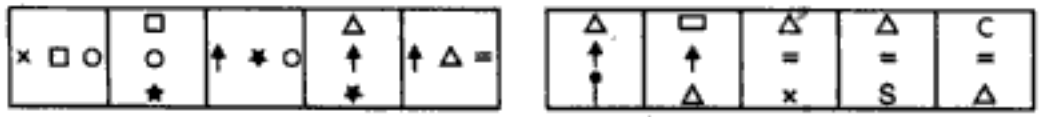


(B.S.R.B. 1994)

401.


402.


(Bank P.O. 1994)

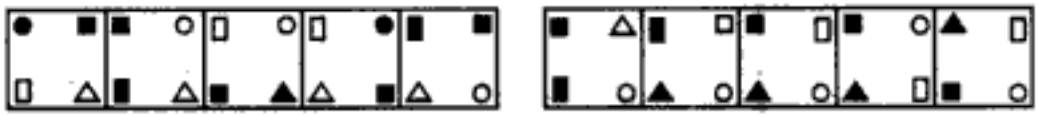
Problem Figures **Answer Figures**

414.

415.

(B.S.R.B. 1994)

416.



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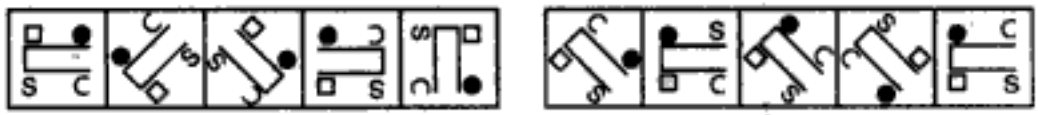


(Bank P.O. 1994)

418.

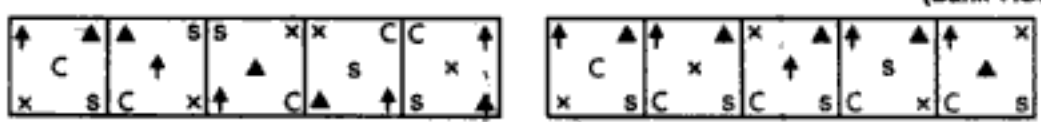
419.

(B.S.R.B. 1996)

420.

(Bank P.O. 1993)

421.



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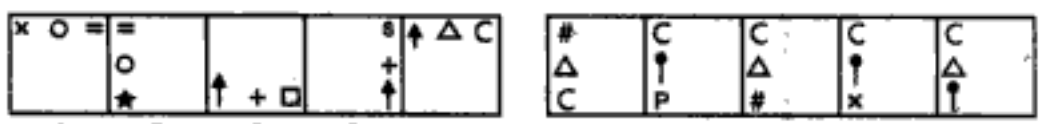

(NABARD, 1994)

423.

(B.S.R.B. 1995)

424.

Problem Figures **Answer Figures**

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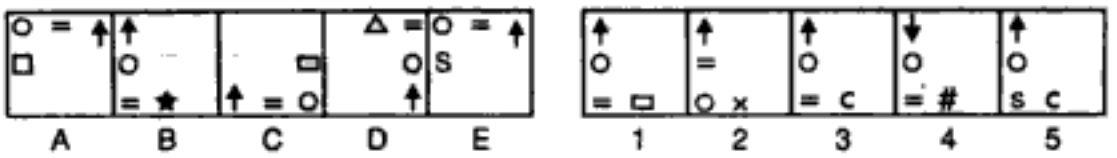

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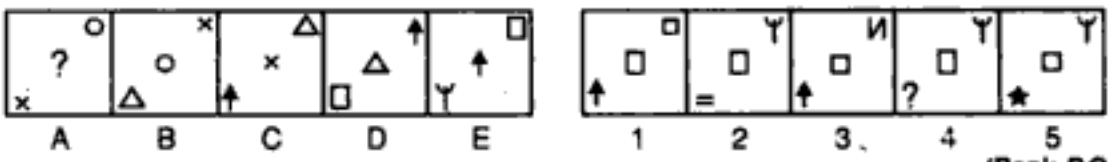
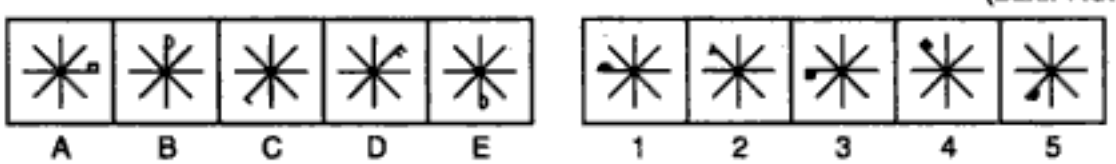


(Bank P.O. 1992)

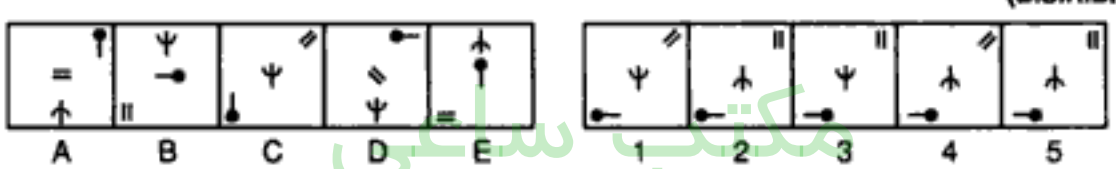
427.



428.

(B.S.R.B. 1995)

429.



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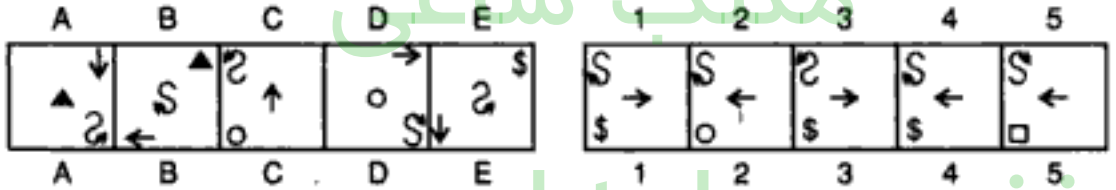

(B.S.R.B. 1996)

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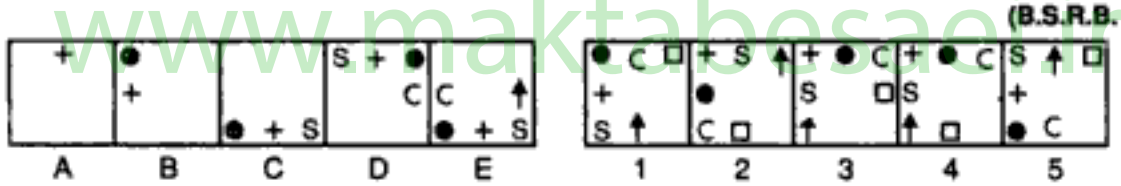
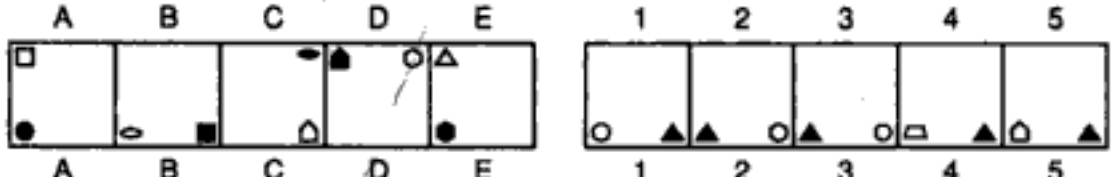


(Bank P.O. 1993)

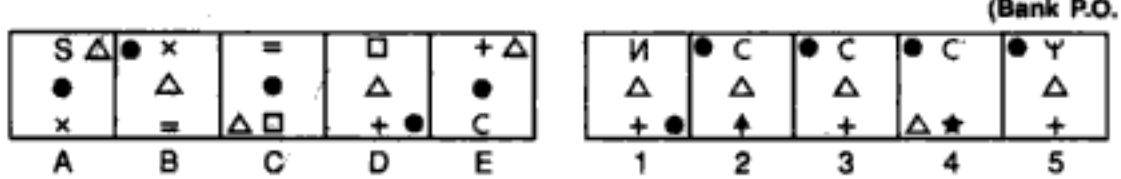
432.

433.



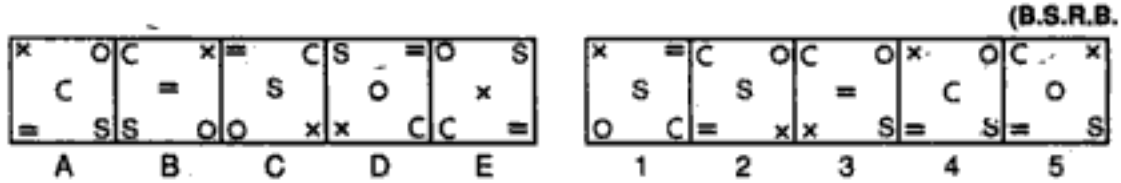
(Bank P.O. 1993)

434.

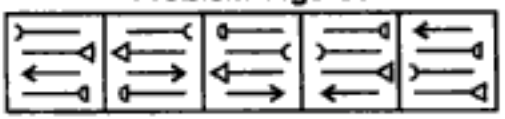


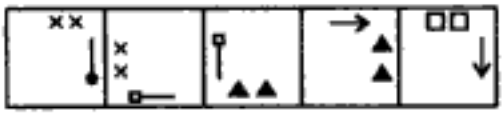
(B.S.R.B. 1993)

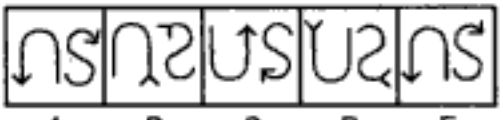
435.



Problem Figures | Answer Figures

436.

A B C D E | 1 2 3 4 5
(R.B.I. 1993)

437.

A B C D E | 1 2 3 4 5

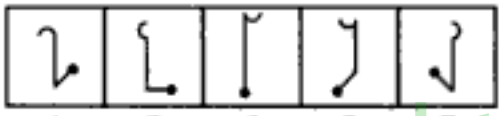
438.

A B C D E | 1 2 3 4 5
(B.S.R.B. 1996)

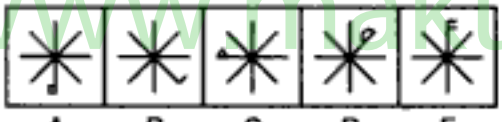
439.

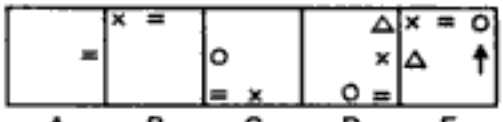
A B C D E | 1 2 3 4 5
(B.S.R.B. 1995)

440.

A B C D E | 1 2 3 4 5
(Bank P.O. 1994)

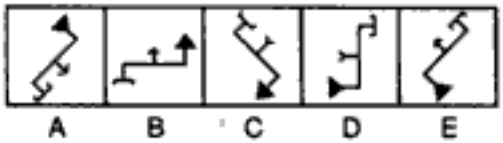
441.

A B C D E | 1 2 3 4 5

442.

A B C D E | 1 2 3 4 5
(B.S.R.B. 1994)

443.

A B C D E | 1 2 3 4 5

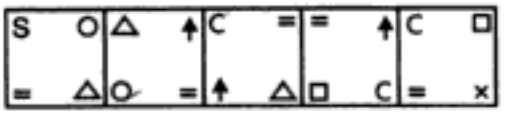
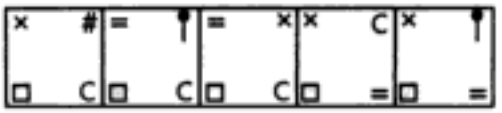
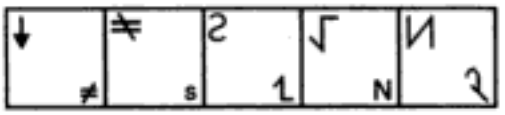
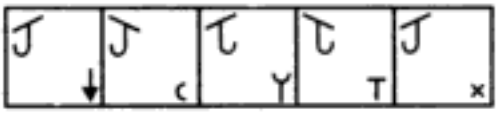
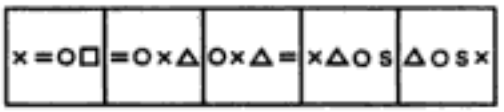
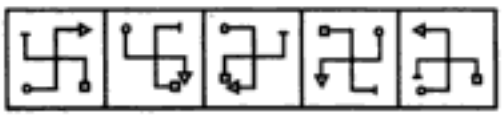
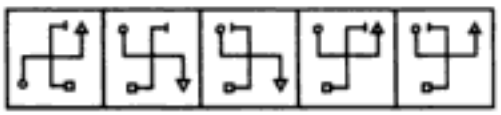
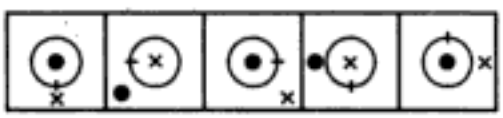
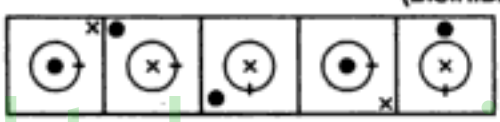
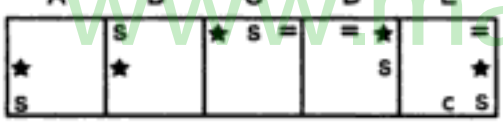
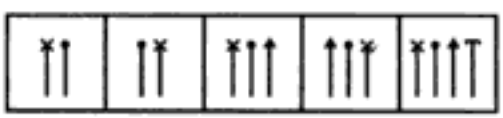
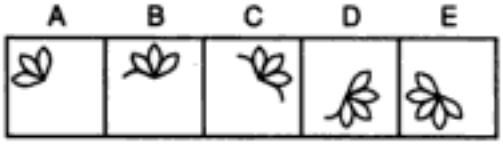
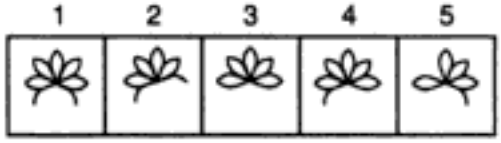
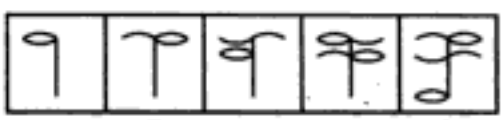
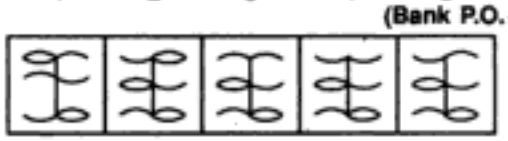
444.

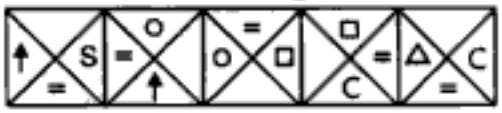
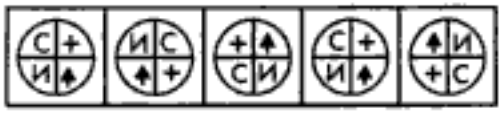
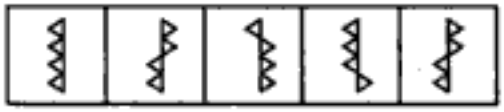
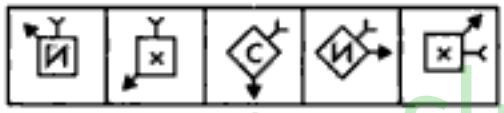
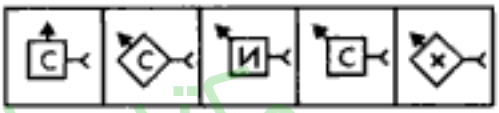
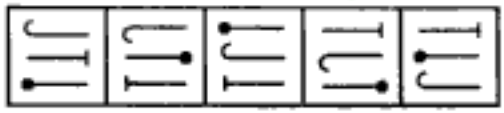
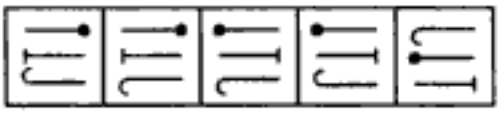
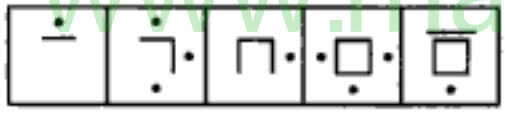
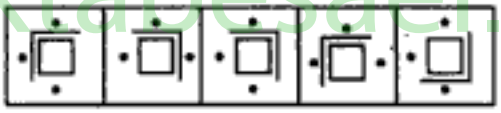
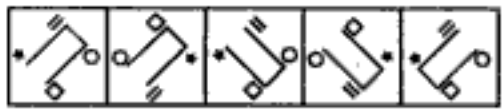
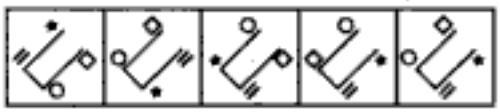
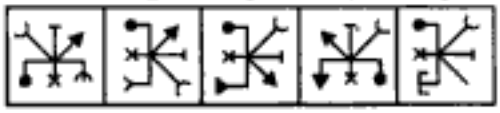
A B C D E | 1 2 3 4 5
(B.S.R.B. 1996)

445.

A B C D E | 1 2 3 4 5
(B.S.R.B. 1995)

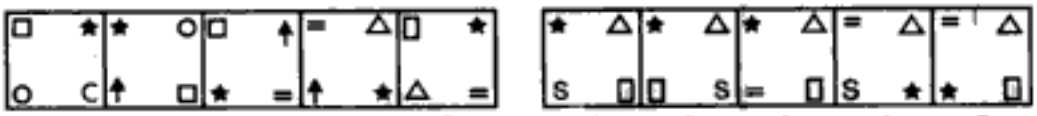
446.

A B C D E | 1 2 3 4 5
(B.S.R.B. 1996)

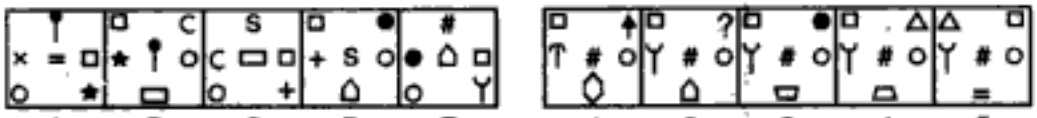
	Problem Figures	Answer Figures
447.	 A B C D E	 1 2 3 4 5
		(NABARD, 1994)
448.	 A B C D E	 1 2 3 4 5
		(Bank P.O. 1993)
449.	 A B C D E	 1 2 3 4 5
450.	 A B C D E	 1 2 3 4 5
		(B.S.R.B. 1994)
451.	 A B C D E	 1 2 3 4 5
		(B.S.R.B. 1995)
452.	 A B C D E	 1 2 3 4 5
453.	 A B C D E	 1 2 3 4 5
		(B.S.R.B. 1995)
454.	 A B C D E	 1 2 3 4 5
455.	 A B C D E	 1 2 3 4 5
		(Bank P.O. 1996)
456.	 A B C D E	 1 2 3 4 5
		(S.B.I.P.O. 1994)
457.	 A B C D E	 1 2 3 4 5

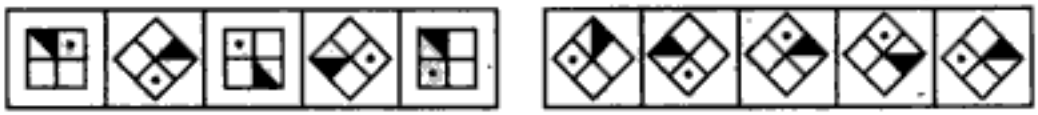
	Problem Figures					Answer Figures					
469.		A	B	C	D	E		1	2	3	4	5
												(B.S.R.B. 1994)
470.		A	B	C	D	E		1	2	3	4	5
471.		A	B	C	D	E		1	2	3	4	5
												(Bank P.O. 1995)
472.		A	B	C	D	E		1	2	3	4	5
473.		A	B	C	D	E		1	2	3	4	5
												(B.S.R.B. 1995)
474.		A	B	C	D	E		1	2	3	4	5
												(S.B.I.P.O. 1994)
475.		A	B	C	D	E		1	2	3	4	5
476.		A	B	C	D	E		1	2	3	4	5
												(B.S.R.B. 1996)
477.		A	B	C	D	E		1	2	3	4	5
478.		A	B	C	D	E		1	2	3	4	5
												(B.S.R.B. 1995)
479.		A	B	C	D	E		1	2	3	4	5
												(Bank P.O. 1996)

Problem Figures **Answer Figures**

480. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1994)

481. 
A B C D E 1 2 3 4 5

482. 
A B C D E 1 2 3 4 5
(Bank P.O. 1995)

483. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1993)

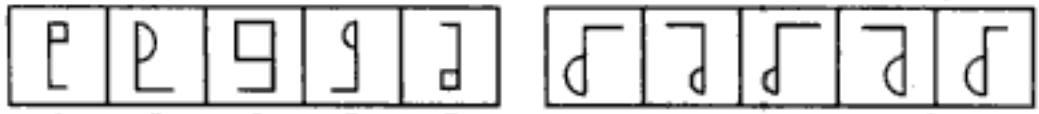
484. 
A B C D E 1 2 3 4 5
(S.B.I.P.O. 1994)

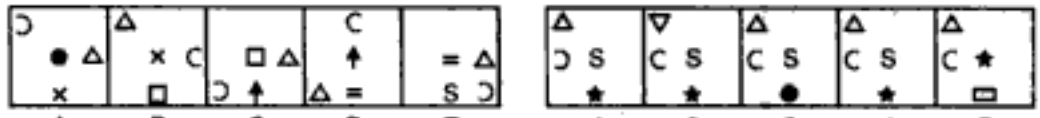
485. 
A B C D E 1 2 3 4 5

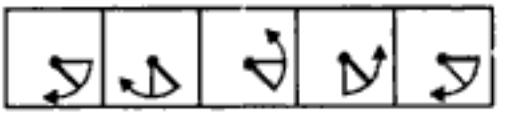
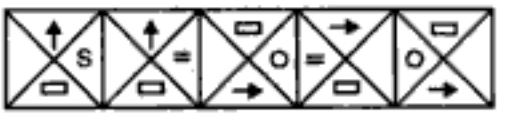
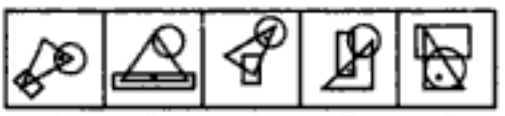
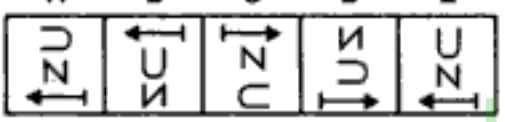
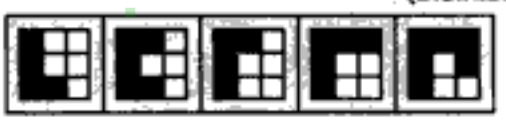
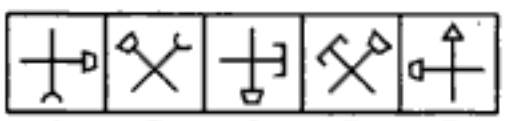
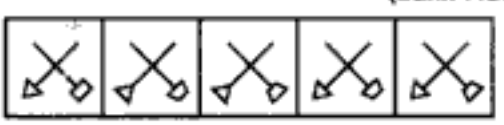
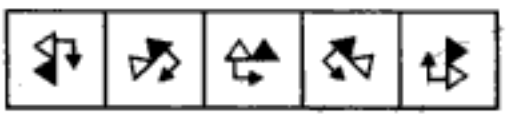
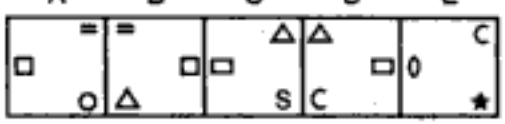
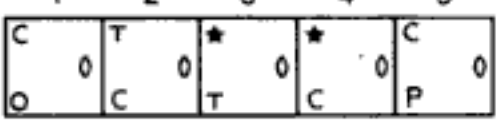
486. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1995)

487. 
A B C D E 1 2 3 4 5

488. 
A B C D E 1 2 3 4 5
(B.S.R.B. 1996)

489. 
A B C D E 1 2 3 4 5

490. 
A B C D E 1 2 3 4 5
(S.B.I.P.O. 1994)

	Problem Figures	Answer Figures
491.	 A B C D E	 1 2 3 4 5
492.	 A B C D E	 1 2 3 4 5
493.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1994)
494.	 A B C D E	 1 2 3 4 5
495.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1995)
496.	 A B C D E	 1 2 3 4 5
497.	 A B C D E	 1 2 3 4 5 (Bank P.O. 1995)
498.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1996)
499.	 A B C D E	 1 2 3 4 5
500.	 A B C D E	 1 2 3 4 5 (B.S.R.B. 1995)

portion of the figure and two lines are added to the L.H.S. portion. The two steps are repeated alternately.

42. (2) : The figure rotates 135° ACW in each step.

43. (5) : One of the pins gets inverted in each step.

44. (3) : The outer arrow moves ACW and its head gets reversed in each step. The dark rectangle also moves to the adjacent side in ACW direction. The inner triangle first moves to the adjacent side and then to the opposite side.

45. (4) : The shading moves CW in every second step. The arc gets laterally inverted in one step and moves to the adjacent side in an ACW direction in the next step.

46. (4) : Similar figure reappears in every second step and each time the first figure reappears, it gets rotated in ACW direction while each time the second figure reappears, it gets rotated in CW direction.

47. (2) : The arrow moves 45°, 90°, 135°, 180°, ... successively in an ACW direction and also rotates 90° CW in each step.

48. (4) : The line inside the rhombus moves ACW in every alternate figure and the symbol moves one step ACW and gets replaced by a new one in alternate figures.

49. (1) : All the symbols move CW in each step and the symbols before and after the triangle get replaced by new ones alternately.

50. (2) : Arcs and T's are added alternately and in each step the arcs and the T's reverse their directions.

51. (4) : Three cups and one cup reverse their directions in alternate steps.

52. (5) : One and two lines are added to the figure alternately.

53. (3) : The symbol moves 2, 4, 6, ... steps ACW sequentially and is replaced by a new symbol in each turn.

54. (3) : The '×' moves one step and two steps ACW alternately and a new symbol is added once before and once after the pre- existing lines.

55. (2) : Two and one arcs reverse their directions alternately.

56. (5) : The arrows move ACW in each step and one extra arrow is added after every second step. The arrowheads change after every two steps.

57. (3) : The white figure moves to the opposite corner and becomes black while the black figure is replaced by a new white figure. This goes on in each step.

58. (3) : In each step, the two upper symbols interchange positions amongst themselves and the two lower symbols interchange positions amongst themselves. The lower most and the uppermost symbols are replaced by new symbols alternately.

59. (3) : In each step, all the symbols move upwards; the uppermost symbol reaches the bottom and the symbol that reaches the top gets replaced by a new one.

60. (1) : In each step, one line disappears from the upper part of the figure and one line is added to the lower part of the figure.

61. (5) : All the symbols move ACW in each step and new symbols are added before and after the pre-existing symbols alternately.

62. (2) : The cup-shaped figure moves ACW through an angle of 90° at each step while the arrow moves diagonally and gets inverted at each step.

63. (2) : The shaded portions move one step ACW each time and one extra portion gets shaded alternately.

64. (5) : The upper and the middle parts of the figure are identical in alternate steps and reverse their directions in every second step. The lower part of the figure repeats itself after every third step.

65. (5) : The central figure gets duplicated in one step and gets replaced by a single new figure in the next step. This process repeats. The circle and the square interchange positions in each step.

88. (4) : The two semi circles reverse their directions alternately one after the other. The lower short line rotates 90° ACW in each step while the upper short line rotates 90° CW in alternate steps.

89. (1) : The similar figure appears in every third step and each time it reappears a line is added to it.

90. (4) : The figure rotates 90° CW in each step and half, one, one & a half, two, ... sides of square are added sequentially.

91. (3) : In one step, from the L.H.S., first and second symbols interchange positions and the fifth symbol becomes the third one. In the next step, fourth and fifth symbols interchange positions and the first symbol becomes the third one. The two steps are repeated alternately. Moreover, the figure rotates 45° ACW and 90° ACW alternately.

92. (4) : One, two, two, three, three, ... sides of the hexagon are missing sequentially. The sides which are missing in any of the figures lie alternately to the R.H.S. and L.H.S. of the sides missing in the preceding figure. Moreover, one extra dot is added to the figure in every second step and the pre-existing dots move clockwise.

93. (1) : Two half leaves are added in first, third, fifth, ... steps and the figure rotates 45° CW in each step.

94. (3) : In the upper part of the figure first the L.H.S. arc gets laterally inverted, then the arrow gets inverted and then the R.H.S. arc gets laterally inverted and the three steps are then repeated. In the lower part of the figure, the same position is retained in two consecutive figures.

95. (1) : The semicircle rotates 90° CW in each step and moves along the diagonal. The other figure gets inverted in each step and moves horizontally.

96. (1) : In each step, one of the lines in the lower part of the figure becomes vertical and an arc is added to the upper part of the figure which is curved in a direction opposite to the last curve.

97. (2) : The L-shaped figure gets rotated CW through 90° and increases in number by one in each alternate step. The figure in the top left corner replaces the figure in the top right corner and a new figure appears in the top left corner at each step.

98. (1) : Once the signs in pairs (O, =) and (↑, ×) interchange their positions and then both the pairs interchange positions.

99. (3) : Similar figure appears alternately and each time it reappears it gets rotated through 135° ACW and the shading moves one step.

100. (3) : Three and four line segments are added alternately to from L's in a set order.

101. (4) : One extra arrow is added above the pre-existing arrows in every alternate step and the pre-existing arrows reverse their directions in each second alternate figure.

102. (1) : One of the symbols moves ACW and the other moves diagonally in each step. The symbols are replaced by new ones after every second step.

103. (4) : Half leaves are added to the upper and lower part of the figure alternately.

104. (5) : In the first step, the symbol in the top left corner gets inverted and all other symbols move ACW. In the second step, the symbol in the top right corner gets inverted and all other symbols move ACW. This goes on alternately.

105. (3) : The symbols move in a set order and a new symbol is added in the lower left corner at each step.

106. (3) : In one step, the middle symbol on the left side and the upper and lower symbols on the right side move one step CW. In the next step, the other three symbols move one step ACW.

107. (4) : One 'L' from the R.H.S. and two L's from the L.H.S. are removed from the figure alternately.

108. (2) : The figure rotates 120° CW in one step and in the next step, half of the circle opposite the black part gets black and the shading already present is lost. In the

third step again the figure rotates 120° ACW and in the fourth step, the part opposite the half shaded circle becomes black and the existing shading is lost. This procedure is continued.

109. (3) : The first and second symbols; and the second and third symbols interchange positions alternately. The half pin rotates 180° in each step. The half-arrow rotates 180° in one step and gets inverted in the next step. In case of the third symbol, it gets reversed and then its head is inverted in one step and in the next step, only its head gets inverted.

110. (3) : Similar figure repeats in every four steps and each time a figure re-appears, it gets inverted.

111. (2) : The symbol 'S' moves ACW from corner to corner; the 'Δ' moves up and down along a diagonal, the square moves up and down along the other diagonal. The fourth symbol moves ACW from corner to corner and is replaced by a new symbol in each step.

112. (5) : Similar figure appears alternately and each time it reappears the arrow moves to the opposite side of the square and reverses its direction.

113. (1) : The '×' moves one step and two steps ACW alternately and a symbol is added once before and then after the cross alternately.

114. (1) : A new line is added as a side of each one of the pre-existing parts of squares, a new line appears for a new square and a line appears in the completely formed squares.

115. (2) : The figure rotates 90° CW in each step and half and quarter circles are added to it on the inside alternately.

116. (5) : In first step, the symbols move in the order  . In the second step, the symbols move in the order  . The two steps are repeated alternately.

117. (4) : In each step, the outer bigger figure becomes smaller and is enclosed in a new figure. The arrow rotates 90° CW and moves one step ACW and each time it bears a new figure at its end.

118. (4) : The symbols move half a side of the square, in an ACW direction, in each step and the symbols before and after the arrow are alternately replaced by new symbols.

119. (2) : The figure rotates 45° ACW and each one of the arcs rotates 90° ACW in each step.

120. (5) : In each step, the figure rotates through an angle of 90°. Alternately, one and two lines are added inside the figure.

121. (3) : Each of the two symbols moves from corner to corner in an ACW direction. But before any of them comes to occupy a corner, it comes in the centre of the square.

122. (3) : Symbols interchange positions once horizontally and then diagonally. Also in each step the symbol in the upper right corner is replaced by a new one.

123. (1) : Similar figure appears alternately and each time it appears, it rotates 90° CW.

124. (2) : The similar figure repeats in every second step and each time the first figure reappears, it gets rotated 90° CW and each time the second figure reappears it gets rotated 45° CW and an extra leaf is added to it.

125. (4) : (A) is rotated 45° CW into (B). The elements at the NW-SE diagonal are interchanged and the elements at the other diagonal are replaced by new ones. (C) is rotated 45° CW into (D). The elements at the NW-SE diagonal are interchanged and the elements at the other diagonal are replaced by new ones. The process is repeated.

126. (4) : In one step, the dot moves to the adjacent line in CW direction and in the next step, the entire figure rotates 45° ACW.

127. (4) : In the first step, all except the first symbol (from the bottom) reverse in direction. In the second step, all except second and third symbols reverse their directions. In

177. (*1*) : The 'C' gets inverted in each step and moves to the adjacent side in ACW direction in second, fourth, ... steps. The arrow gets inverted in each step and moves to the adjacent side in ACW direction in first, third, fifth, ... steps.

178. (*2*) : The shading and the lines move in their respective set orders. The number of lines becomes one and two alternately. Since the position of shading in fig. (E) is the same as in fig. (A), so the position in fig. (B) is to be repeated in the answer figure. The position of lines remains the same in two consecutive figures. So, the position in fig. (E) must be repeated in the answer fig. Also the number of lines must be two.

179. (*4*) : Similar figure repeats in every fourth step and each time a fig. reappears, the L.H.S. part remains the same while the half arrow in the R.H.S. part gets rotated through 180°.

180. (*4*) : The symbol at the lower central position becomes the first symbol in ACW direction and a new symbol appears at the lower central position.

181. (*2*) : The trapezium changes its position in each step and gets inverted in all steps while the other symbol at the end of the line changes its position in each step and gets inverted and replaced alternately.

182. (*1*) : An arc is added inside the square in one step and it comes out of the square and reverses its direction in the other step. Also an arrow is added to the figure in one step and it gets reversed.

183. (*5*) : The figure rotates 90° CW in each step. The number of dots decreases by one in first, third, fifth, ... steps and the number of arrows increases by one in second, fourth, ... steps.

184. (*5*) : The symbols move in the order  in the first step; in the order  in the second step; in the order  in the third step; in the order  in the fourth step and so on. Thus, the first step will be repeated as the fifth step.

185. (*3*) : The upper and the right symbols and the lower and the left symbols interchange positions in one step white the upper and the left symbols and the lower and the right symbols interchange positions in the next step. This goes on alternately. Symbols are replaced by new ones ACW.

186. (*5*) : The figure rotates 90° ACW and 135° CW alternately. The white figure is replaced by a new one in each step. In the second step, the black figure reverses its position and in the fourth step the black and the white figures interchange positions.

187. (*3*) : In the first, third, fifth, ... stpes, the symbols move in the order  and the symbol that reaches the top right corner gets replaced by a new one. In the second, fourth, ... steps, the symbols move in the order  and the symbol in the lower left corner gets replaced by a new one.

188. (*1*) : Every second figure is the water image of the previous one.

189. (*2*) : Similar figure appears alternately and each time a fig. reappears, it gets rotated 90° CW and a line gets added to it.

190. (*4*) : The shading moves CW two and three steps alternately.

191. (*5*) : The arrow moves 1, 2, 3, ... steps CW sequentially and the dot moves 1, 2, 3, ... steps ACW sequentially.

192. (*2*) : In the first, third, fifth, ... steps the symbols move in the order  and

274. (2) : Arrows with half, one, one and a half, ... arrow heads are added in each step.

275. (1) : The triangle with white circle moves CW in a set order and one extra line is added to the fig. in every second step.

276. (3) : The symbols move in the order  in each step. The triangle rotates 90° ACW and the arrow rotates 90° CW in each step. The rectangle gets half shaded in one step; gets inverted in the second step and becomes unshaded in the third step. This process repeats.

277. (3) : An arc is added to the fig. in each step and the pre-existing arcs get reversed in direction.

278. (4) : The V-shaped symbol moves up and down along the midline and rotates 90° ACW in every second step. The other symbol moves one, two three, ... steps ACW in subsequent turns and gets replaced by a new symbol in each step.

279. (1) : The symbols are replaced by new ones step by step in a CW direction.

280. (2) : First the arrow interchanges its position with that of the signs placed on its right in three subsequent steps. It is then followed by the pin. Also, as any two signs interchange places both of them get inverted.

281. (4) : Starting from the top, the part of the figure get curved stepwise and then again the lines become straight in the same order.

282. (5) : The central symbol in the first figure moves towards the left and once it reaches the leftmost position it moves to the rightmost position in the next step. The lower right symbol in the first figure moves upwards along the diagonal & once in the uppermost position it reaches the lowermost position in the next step. It gets replaced by a new symbol in every second step. The arrow moves to the adjacent corner ACW in each step & rotates 90° ACW, 45° CW, 90° ACW, ... sequentially.

283. (5) : The star and the rectangle move downwards sequentially along the left boundary, the midline and the right boundary.

284. (4) : An arc is added to the figure in each step and all the pre- existing arcs reverse their directions in each step.

285. (3) : The cup-shaped figure opens out in two steps and then gets inverted moving diagonally. The process is repeated.

286. (5) : The arrow moves ACW alternately and reverses its direction in each step. The triangle moves CW alternately and reverses its direction in each step.

287. (5) : The line along which the symbols lie rotates 90° ACW in each step. The symbols interchange positions in one step and are replaced by new symbols in the next step.

288. (5) : In one step, the figure rotates 90° CW and in the next step, it returns to its initial position and gets laterally inverted. This process is repeated. Also, the pins get attached to the triangle with lines and the half-shaded triangle alternately. The number of lines in the triangle increases by one at each step.

289. (5) : A new element is added at the top in each figure. The first, third, fifth, ... elements move ACW while the second, fourth, ... elements move one step CW. Also, each element appears only thrice and then disappears.

290. (5) : Similar figure appears alternately. Each time a fig. reappears, the three symbols on one side of the mid-line move upwards and the upper symbol becomes the lower one. The two symbols on the other side of the line interchange positions.

291. (2) : Fig. (A) repeats in (E). So, fig. (B) should repeat after (E) to continue the series.

292. (5) : In one step, the two upper symbols interchange positions and a new symbol replaces the one at the lowermost position. In the next step, the two lower symbols interchange positions and the symbol at the uppermost position gets replaced by a new one.

293. (3) : The arrows and the pins are added alternately. All the pins and the arrows rotate 90° CW in each step.

294. (5) : In one step, a line in the upper part of the figure disappears and a line in the lower part of the figure becomes horizontal and in the next step, a line in the lower part disappears. This process repeats.

295. (3) : The symbols move in the order  . In each step, the symbol that reaches the upper left position gets replaced by a new one.

296. (5) : The shading moves one step ACW each time. Also, an extra portion gets shaded after every second step.

297. (3) : In each step, the upper smaller symbol comes to the lower position, gets enlarged and also gets inverted upside down. The lower, bigger symbol goes to the upper position, reduces in size and gets replaced by a new one.

298. (2) : One of the arrows rotates ACW 90° and 45° alternately. The other arrow rotates 45° and 90° ACW alternately. The pin moves CW from corner to corner and also rotates 90° CW in each step.

299. (2) : The square rotates through 45° in each step and the line moves 90° and 135° ACW alternately. The symbol outside the square goes inside while the inner symbol comes out in each step. Also, each time the circle comes out it moves CW and each time the other symbol comes out it also moves CW. Moreover, whenever the symbol (other than the circle) goes inside, it gets replaced by a new one.

300. (4) : In each step, the last symbol becomes the first and a new symbol is added in front of it.

301. (1) : In one step, all the arrows get inverted and the fourth arrow comes to the top and in the next step, except the first arrow all other arrows are inverted and the third and the fourth arrows reach to the top. The two steps are repeated alternately.

302. (5) : Similar figure repeats in every fourth step and each time it reappears it rotates through 180°.

303. (5) : The symbols interchange positions horizontally in one step, vertically in second step and both horizontally and vertically in third step. This process repeats.

304. (4) : Horizontal shading moves ACW while vertical shading moves CW.

305. (2) : In each step, the larger sector of the circle rotates 90° CW while the smaller sector rotates 45° ACW.

306. (3) : Similar figure repeats in every third step and each time it reappears it rotates 90° ACW and a line detaches from the lower part and adds on to the upper part.

307. (2) : In one step, the fourth symbol becomes the first one and all other symbols move one step downwards. In the next step, the first and third, and the second and fourth symbols interchange positions. The pin gets inverted in one step and rotates through 180° in the next step. The arc reverses in direction in one step and the whole arrow gets laterally inverted in the next step. The triangle gets reversed in one step and both the arrow and the triangle get inverted in the next step. The fourth arrow gets inverted in one step and laterally inverted in the next step. The process is repeated.

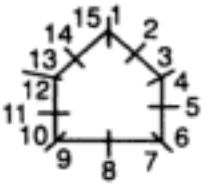
308. (4) : The U-shaped arrow is first laterally inverted and then inverted alternately. In the S-shaped arrow, first the arrowhead is inverted and then the whole arrow is inverted alternately.

309. (5) : We first label the figure as shown : 

324. (3) : The circle interchanges position with the line and the arc interchanges position with the square in one step and the figure rotates 45° ACW in the next step. This goes on alternately.

325. (1) : In one step, the first and the second symbols (counting in CW direction) interchange positions and in the next step, the first and the third symbols interchange positions. This goes on alternately. The remaining symbol moves to the vacant portion and gets replaced by a new symbol in each step.

326. (2) : The pin moves one, two, three, ... steps ACW in subsequent turns with its head pointing towards the centre each time. The semi-circle moves one, two, three, ... steps CW along the sides of the figures, the steps being counted as under.



327. (1) : The S-shaped figure moves along a diagonal and rotates 90° ACW in each step while the arrow moves horizontally and gets inverted in every third step.

328. (3) : The pin gets inverted and moves one step ACW each time. The half arrow moves one step ACW and reverses direction in first turn, moves one step ACW in the second turn, reverses direction in the third turn, moves one step ACW in the fourth turn and finally again moves one step ACW and reverses direction.

329. (3) : The hooks get laterally inverted and a new hook is added alternately. The number of dots increases by one after every two steps.

330. (1) : The bent pin rotates 90° CW in each step. The J-shaped symbol gets inverted upside down in one step and laterally inverted in the next step. A similar type of third symbol occurs in alternate steps and when it reappears it gets laterally inverted in one turn and inverted upside down in the next turn. All the symbols move one step CW in every second step.

331. (2) : Arrow moves 45° CW and pin moves 45° ACW in each step.

332. (3) : The first and second, the second and third and the first and third symbols interchange positions in subsequent steps. The arrow and the pin get laterally inverted alternately.

333. (1) : One element is removed from the bottom in each step. First the leftmost symbol, then the rightmost symbol and finally the line disappears.

334. (5) : The symbols move downwards along the diagonal and in each step the lowermost symbol becomes the uppermost. The triangle gets inverted, the rectangle rotates through 90° and the square rotates through 45° in each step.

335. (3) : The central symbol interchanges position with one of the corner symbols and the symbol that comes to the centre gets replaced by a new one. This goes on in a CW direction.

336. (3) : The lower left figure rotates 90° ACW and gets enlarged; the upper large figure rotates 90° ACW and gets diminished; the third figure is replaced by a new one and all the figures then rotate one step CW.

337. (2) : All the symbols move one step ACW and alternately the first and third symbols are replaced by new ones.

338. (2) : The symbols move in the order  in each step. Also, the symbol in the lower right corner disappears and a new symbol appears in the upper right corner.

404. (3) : In the upper pin, the head moves to the other side of the line and moves upwards half the length of the line in each step. The lower pin gets laterally inverted in one step and inverted upside down in the next step. The arrowhead gets laterally inverted in each step and moves sequentially along the line. The arrow shifts to the opposite side of the square in every second step.

405. (4) : A P-shaped symbol obtained by inverting the previously added symbol upside down is added at each step. The pre-existing Ps get laterally inverted.

406. (1) : The figure rotates 90° CW in each step. The arrows with two and one lines interchange positions. The symbol similar to one of the arrow-heads appears at the centre. In one step, one of the arrowheads is replaced by a new one and in the next step, both the arrowheads are replaced by new symbols.

407. (2) : The semi-circle gets inverted in every third step and the symbol inside the semi-circle is replaced by a new symbol in every second step. The number of '+' signs increases by one in every second step.

408. (5) : Similar figure repeats alternately. Each time a figure reappears, the arrow rotates 90° ACW and the N-shaped symbol gets inverted. The arrow moves stepwise up and down along the central line while the N-shaped symbol moves along the diagonal.

409. (4) : The figure rotates 90° ACW in each step. Also black arrow is replaced by a square, 'T' by black arrow, arrow by 'T', square by arrow and so on, sequentially.

410. (1) : The first triangle gets inverted in each step, the second triangle gets inverted in every second step and the third triangle rotates 90° CW in every second step. The arrow rotates 90° ACW and 90° CW alternately in second, fourth, ... steps and moves to the adjacent corner CW in first, third, ... steps.

411. (4) : The S-shaped arrow moves along a diagonal sequentially and gets laterally inverted and inverted upside down alternately. The arrow moves along the other diagonal and rotates 90° CW in each step. The third symbol moves along the same diagonal as the arrow and gets replaced by a new symbol in every second step.

412. (4) : In one step, the middle and innermost figures interchange positions and the outermost figure is replaced by a new one. In the next step, the innermost and outermost figures interchange positions and the middle figure gets replaced by a new one. The process repeats.

413. (1) : The cup-shaped figure rotates 90° CW in each step. In case it opens towards the right it gets laterally inverted. The upper and left arcs get inverted in one step and the lower and right arcs get inverted in the next step.

414 (1) : The first symbol moves along the diagonal from top right to lower left corner while the second symbol moves along the other diagonal. In the first step the first symbol is replaced by a new one and in the next step, the other symbol is replaced by a new one.

415. (2) : The similar figure appears in every alternate step and each time it reappears, the semicircle rotates 90° CW and a line is added to the figure.

416. (3) : In each step, the square interchanges position with the adjacent dark symbol in ACW direction. This symbol gets unshaded while the next symbol gets darkened.

417. (3) : The figure rotates 45° and 90° ACW alternately and the symbols move one step ACW each time.

418. (5) : In each step, the uppermost element becomes the lowermost and all other elements move upwards. Also, the figure gets laterally inverted in each step.

419. (1) : The figure rotates 45° CW in each step. Also, in one step, the elements at the extreme positions get inverted and the middle arrow moves to the other side of the line and in the alternate step, the arrowhead gets inverted and the lines at the extreme positions move to the other side of the line.

420. (3) : In one step, the symbols move in the order  and the symbol that reaches the lower right corner gets replaced by a new one and in the next step, the symbols move in the order  and the symbol that reaches the upper right corner gets replaced by a new one. The two steps are repeated alternately.

421. (1) : In each step, all the symbols move CW and the symbol at the centre interchanges position with the symbol that reaches the lower left corner.

422. (3) : The symbols move two steps ACW each time. In one step, the first symbol is replaced by a new one and in the next step, all the symbols are replaced. The process is repeated.

423. (2) : The circle along with the shaded sector rotates 135° ACW in each step. Also, a similar type of outer curved figure appears in alternate stpes and each time it reappears, it rotates 90° ACW.

424 (2) : The shaded semicircle moves one step ACW each time and gets inside and outside the hexagon alternately. The dot moves one step CW in each step and gets outside and inside the hexagon alternately.

425. (3) : All the symbols move two steps ACW; the circle and the '=' sign interchange positions and the first symbol gets replaced by a new one each time.

426. (2) : In each step, the lower left symbol moves to the upper right position while the other two symbols move down along the diagonal. The symbol that reaches the lower left corner gets replaced by a new one.

427. (1) : The symbol moves two, three, four, ... steps ACW and is replaced by a new one in each step. The symbol also changes direction in each step.

428. (1) : The figure moves along the diagonal. It gets laterally inverted and rotates through 180° alternately.

429. (5) : In each step, the pin rotates 90° CW and moves down along the diagonal from upper right to lower left corner. The '=' sign also moves downwards along the same diagonal and rotates sequentially through 90°, 45°, 90°, 135°, 90°, ... in CW direction. The third symbol gets inverted in first, fourth, seventh, ... steps and moves downwards. (Each one of the symbols, once in the lowermost position, moves to the top most position in the next step).

430. (4) : The S-shaped arrow gets laterally inverted and inverted upside down alternately and moves upwards along a diagonal. The arrow rotates 90° CW in each step and moves along the other diagonal. The third symbol moves upwards along the same diagonal as that of the arrow and also gets replaced by a new symbol in every second step.

431. (1) : The '+' sign moves ACW and a new symbol is added once before and once after it. The number of steps by which the '+' sign moves increases by 2 in every third step.

432. (3) : The shading and the vertical line move to diagonally opposite positions in alternate steps. The similar state of the curves with dots is repeated in every third step and each time it reappears, the curves turn to the other side.

433. (4) : In each step, the unshaded symbol moves to the diagonally opposite corner and gets shaded while the shaded symbol gets replaced by a new unshaded symbol.

434. (2) : The dot moves along the diagonal from upper left to lower right corner while the triangle moves along the other diagonal. The remaining two symbols interchange positions in each step and each time, the symbol that reaches the lower central position gets replaced by a new symbol.

435. (4) : The symbols move in the order  in each step.

452. (2) : Similar fig. appears alternately and each time a fig. reappears, it gets rotated through 45° ACW. In odd numbered figures, the cross moves half a side of the square in ACW direction and in even numbered figures, the dot moves half a side of the square in CW direction.

453. (4) : The 'S' moves one step and half step CW alternately. A symbol is added before 'S' in one step and the symbol existing before 'S' reaches behind the pre-existing symbols in the next step. This goes on alternately.

454. (5) : The whole figure gets laterally inverted in one step and a new arrow is added to the right in the next step.

455. (4) : The figure rotates CW 45°, 45°, 90°, 90°, 135°, ... in subsequent steps. Each time a new half leaf is added first before and then after the pre-existing leaves.

456. (5) : In each step, the leaf parts on L.H.S. move to the R.H.S. of the line and those on the R.H.S. descend half the length of the line and shift to the L.H.S. A complete leaf, half leaf curved upwards, half leaf curved downwards are added sequentially to the top left position.

457. (2) : The pin and the black triangle move two steps ACW in alternates turns. The line inside the hexagon moves ACW in each turn and the line outside the hexagon moves two steps CW in every second turn.

458. (2) : The square along with V-shaped fig. rotates 45° CW in each step. The 'C' rotates 90° ACW and moves to the opposite quarter of the square in each step. The V-shaped figure moves 1, 2, 3, ... steps ACW in subsequent turns.

459. (2) : The cross and the 'C' move in a set pattern i.e. from a corner to the centre and then to the adjacent corner ACW, and so on.

460. (5) : The symbols in the lower left and upper left quadrants move CW and get replaced by new symbols in every fourth step. The symbols in the lower right & upper right quadrants move ACW and get replaced by new symbols in every fourth step.

461. (1) : In each step, a line is removed from the upper figure and added on to the lower figure.

462. (4) : In each step, the figure rotates 90° CW; the symbols move one step CW and the symbol that comes to the corner which is the upper right corner in (*a*) gets replaced by a new one.

463. (1) : The symbols move in the order  in the first step. In subsequent steps, they move in the order obtained by rotating the above order 90° CW each time. Also, the symbol at the encircled position gets replaced by a new one in alternate steps.

464. (5) : The semi-circle on left pin moves one step downward in alternate turns. The lower pin rotates 180° in one step and gets inverted in the next step. The right pin gets inverted in each step and the semi-circle on it moves one step upward in each alternate turn. The semi-circle on the upper pin moves from left to right sequentially and the pin gets inverted in each step.

465. (5) : The '=' sign rotates 90° ACW, 45° ACW, 90° CW, 45° CW, ... and moves sequentially along the diagonal. The pin too moves stepwise along the diagonal and rotates 90° CW in each step. The third symbol gets inverted in every third step and moves sequentially along the central vertical line.

466. (2) : The triangle moves to the adjacent corner ACW in each step and turns white and black in every second step. The triangle with bar moves to the adjacent corner CW in each step and gets inverted in every second step. The arrow moves to the adjacent corner ACW in each step and gets laterally inverted in first, third, fifth, ... steps. The fourth symbol moves to the adjacent corner CW and gets replaced by a new symbol in each step.

467. (*1*) : The central symbol in the first figure moves along the diagonal from the top left to the lower right corner and gets replaced by new symbols in first, fourth, ... steps. The upper right symbol in the first figure moves along the other diagonal and gets replaced by new symbols in second, fifth, ... steps. The third symbol in fig. (A) moves to the adjacent corner in CW direction in each step and gets replaced by new symbols in third, sixth, ... steps.

468. (*2*) : The whole figure rotates 90° ACW and the pair of lines gets inverted in each step. The other two symbols interchange positions in each step and are replaced alternately.

469. (*3*) : The first two symbols in ACW direction interchange positions while the third symbol moves one step ACW and is replaced by a new one in each step.

470. (*1*) : All the symbols move one step CW in one step and the oppositely placed symbols interchange positions in the next step. This goes on alternately.

471. (*2*) : The symbols move in the order  in the first step and the symbol at the encircled position gets replaced by a new one. In subsequent steps, the symbols move in the order obtained by rotating the above order 90° ACW each time.

472. (*1*) : The triangles which get laterally inverted in subsequent steps are 1st & 2nd; 3rd, 4th & !st; 2nd & 3rd; 4th, 1st & 2nd. So, in the next step, 3rd and 4th triangles will get laterally inverted.

473. (*4*) : The inner symbol repeats in every third step. The square rotates 45° CW in every second step. The arrow moves to the adjacent corner of the square in an ACW direction.

474. (*2*) : The second and third symbols, the first and second symbols, and the first and third symbols interchange positions stepwise. The J-shaped symbol gets inverted in each step, the pin gets laterally inverted in each step and the third symbol gets laterally inverted in every second step.

475. (*3*) : In odd-numbered figurers (A, C, E), the dot moves one step CW and two lines are added to the main figure in a set order in each turn. In even-numbered figures (B, D and 3), the three dots move one step CW each and two lines are added to the main figure in a set order each time.

476. (*3*) : The outer arc gets inverted in one step, rotates 90° CW in the next step, gets laterally inverted in the third step and again rotates 90° CW. The process repeats. The figure attached at its end lies towards the outside and inside alternately. The cup-shaped figure rotates 90° ACW in every second step, and the semi-circle moves along its sides sequentially.

477. (*2*) : In the first step, the symbols on either sides of the figure interchange positions and these symbols interchange positions amongst themselves too. In the next step, the figure rotates 90° CW and all the symbols move one step CW. The process repeats.

478. (*3*) : The figure rotates 90° ACW in every second step. A new symbol is added in each step and the symbols move in a set order.

479. (*3*) : The figure is rotated 90° CW in each step. Then, two elements, one element, no element, again two elements and one element change their shapes.

480. (*1*) : The symbols move in the order  in the first step. The symbol that comes to the encircled position gets replaced by a new one. In subsequent steps, the symbols move in the order obtained by rotating the above order 90° ACW in each step.

positions to get the same sequence of symbols as in fig. (A). The first step will, therefore, be repeated.

496. (2) : Similar figure reappears alternately and each time it reappears, the shading moves one step CW and the portion in front of it also gets shaded.

497. (5) : In each step, the first symbol gets inverted and occupies second position. The second symbol goes to the fourth position. The third symbol occupies the first position and is replaced by a new one in alternate steps. The fourth symbol gets inverted and occupies the third position.

498. (5) : In each step, the figure rotates 135° ACW and the trapezium gets inverted. The other symbol gets replaced by a new one in alternate steps.

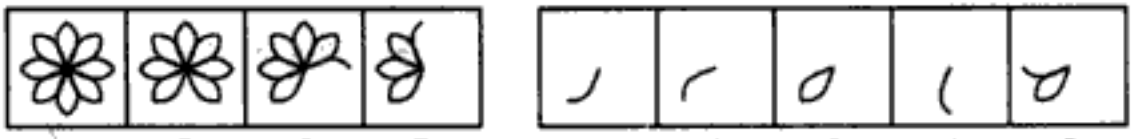
499. (1) : The figure rotates 45° CW in each step. In the first step, the shading shifts to the other triangle and in the next step, the arrow gets laterally inverted and is attached to the other triangle.

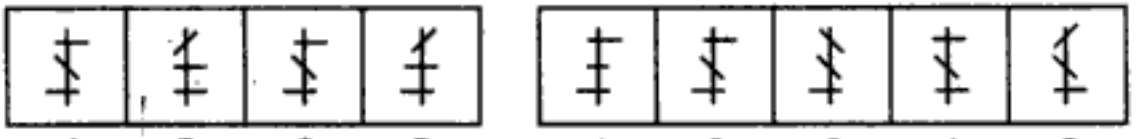
500. (5) : In the first step, the symbols move in the order  and the lowermost symbol is replaced by a new one. In the next step, the symbols move in the order  and the lower two symbols are replaced by new ones. The two steps are repeated alternately.

EXERCISE 1B

Directions : ***Each of the following problems, contains four Problem Figures marked A, B, C and D and five Answer Figures marked 1, 2, 3, 4 and 5. Select a figure from amongst the Answer figures which will continue the same series as given in the Problem Figures.***

PROBLEM FIGURES ANSWER FIGURES

1. 

2. 

(S.B.I.P.O. 1992)

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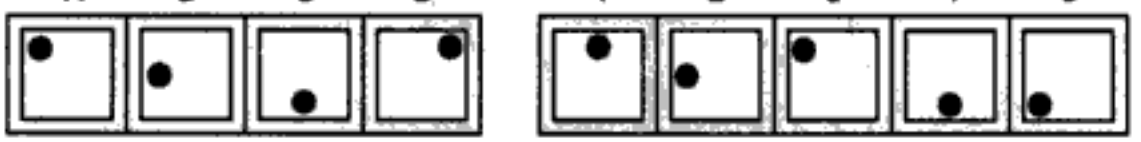
6. 

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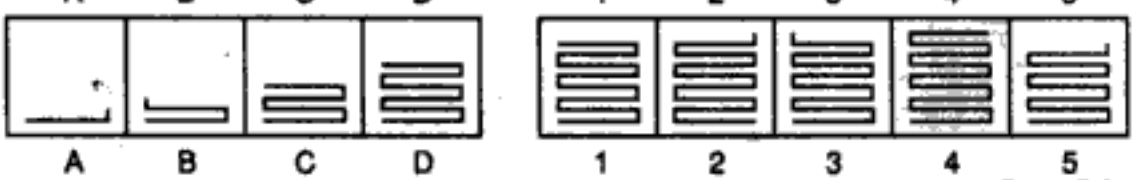
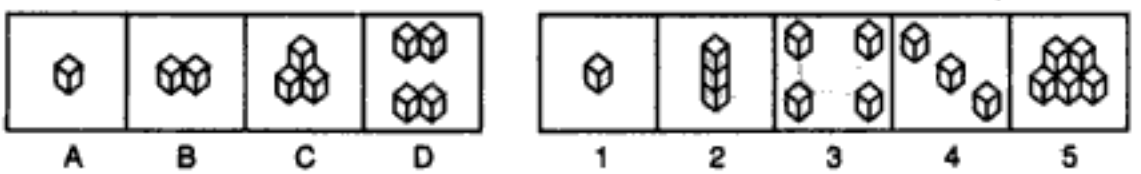
8. 

(Bank P.O. 1990)

9. 

PROBLEM FIGURES ANSWER FIGURES

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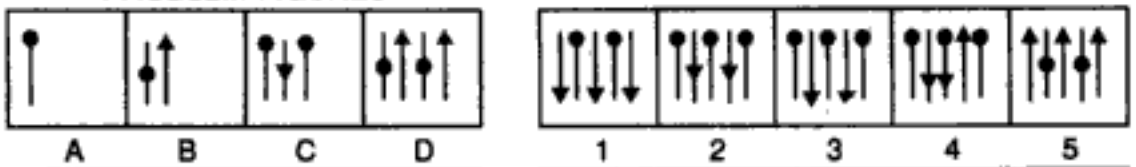

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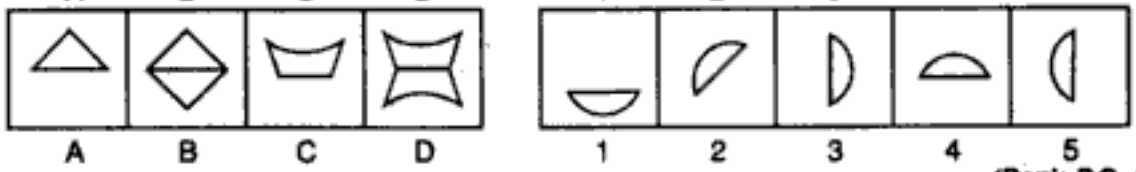

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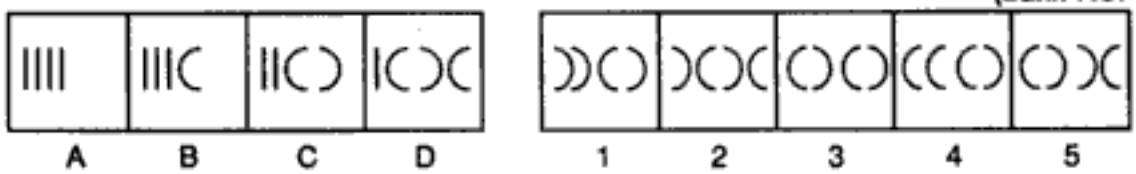

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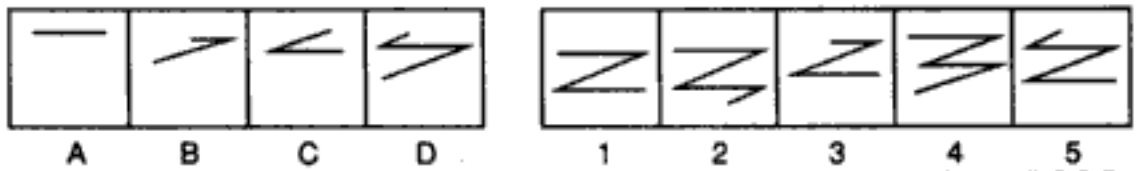

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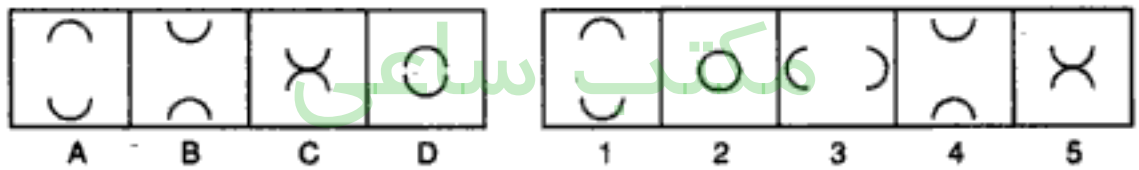

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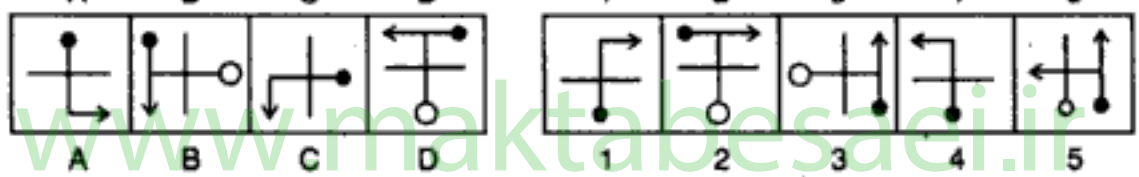

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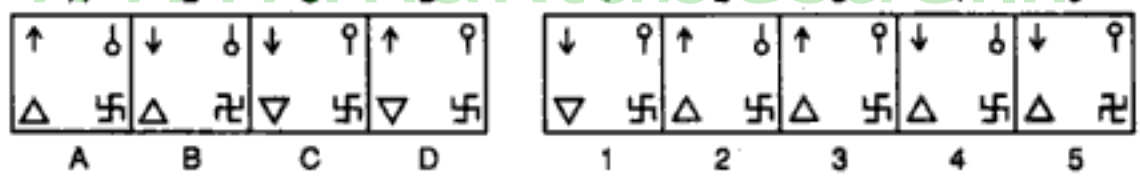

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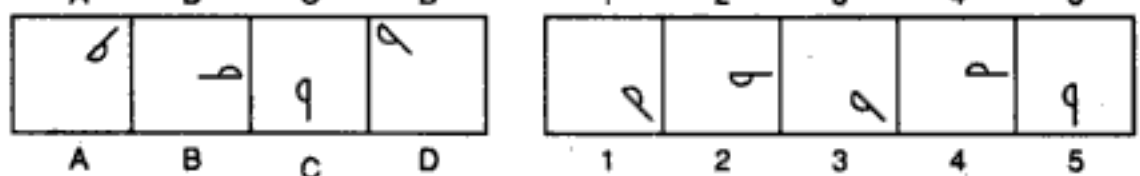

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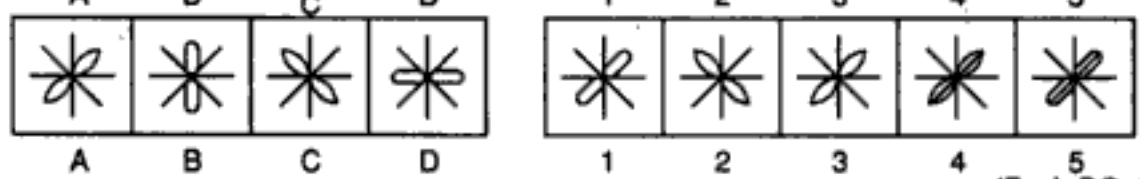

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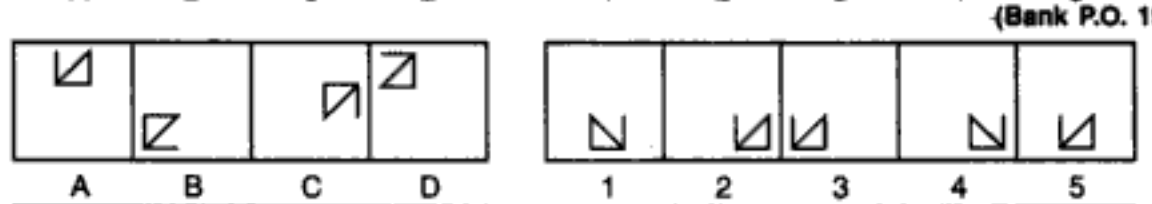

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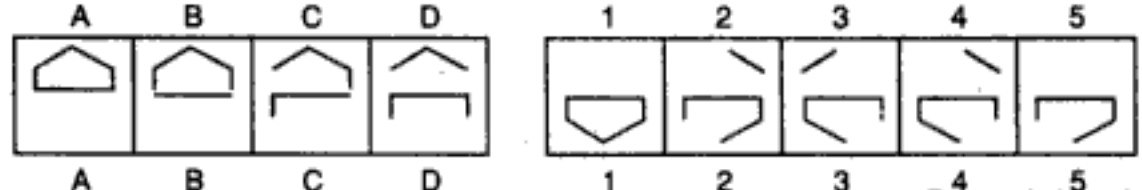

PROBLEM FIGURES ANSWER FIGURES

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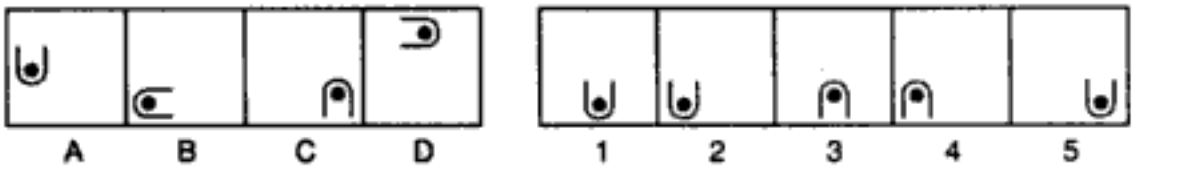

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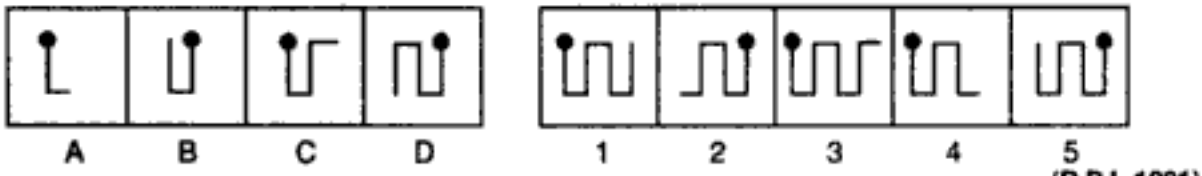

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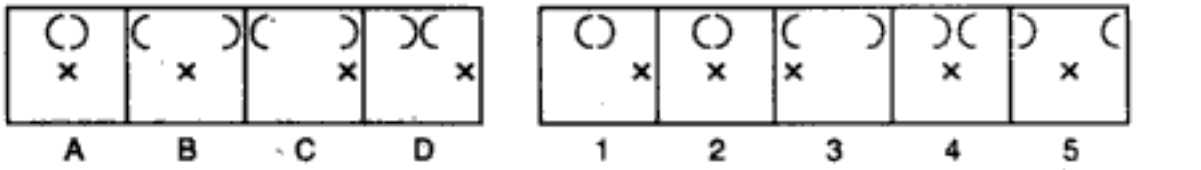

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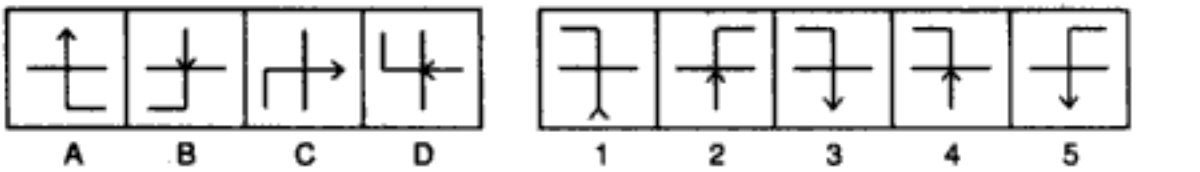

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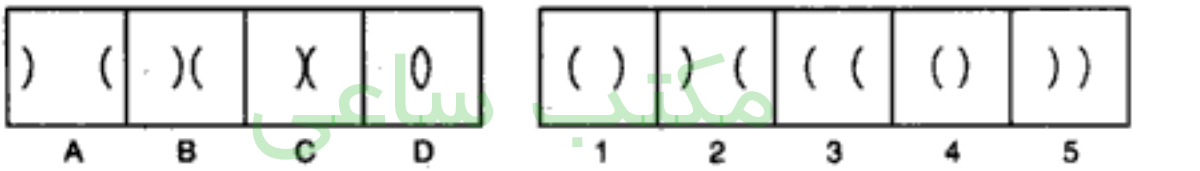

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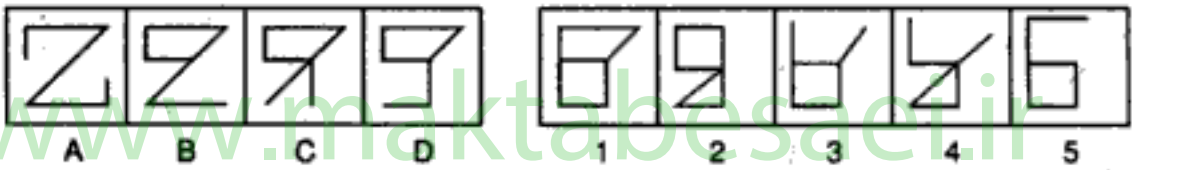

(Bank P.O. 1991)

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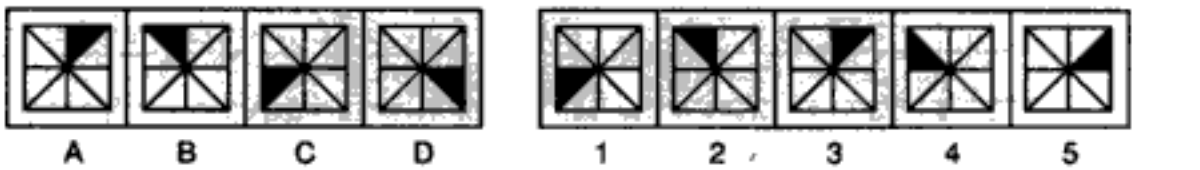

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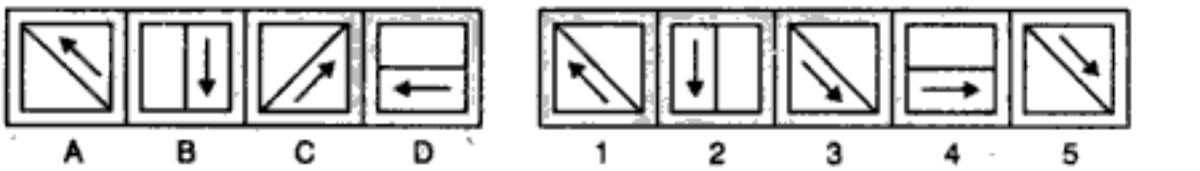

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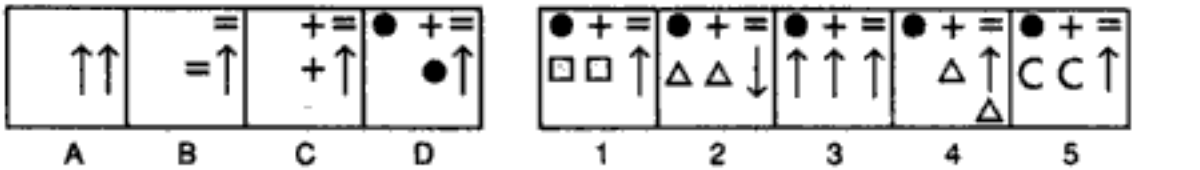

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30.

PROBLEM FIGURES ANSWER FIGURES

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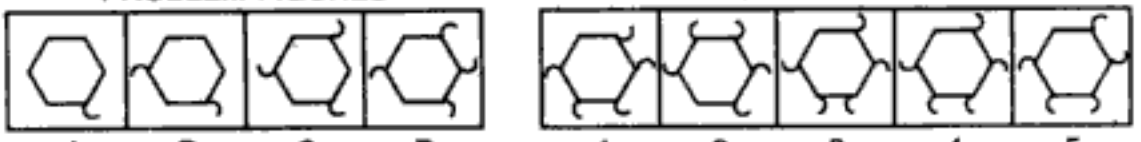

A B C D 1 2 3 4 5

42.

A B C D 1 2 3 4 5

(R.B.I. 1991)

43.

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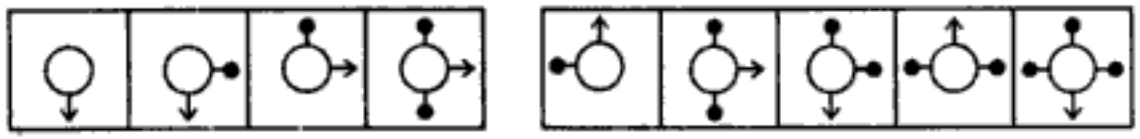

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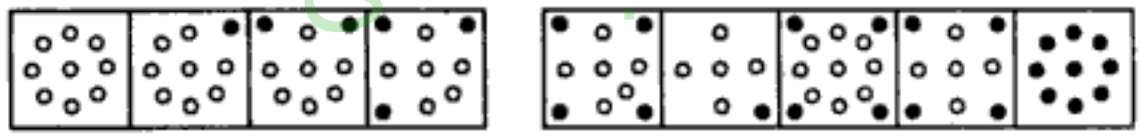

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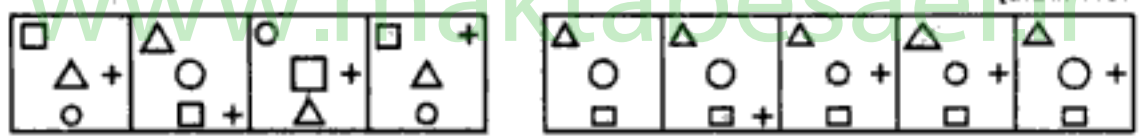

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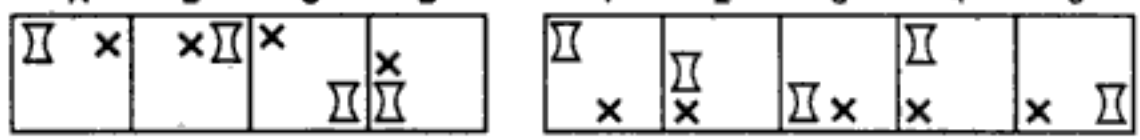

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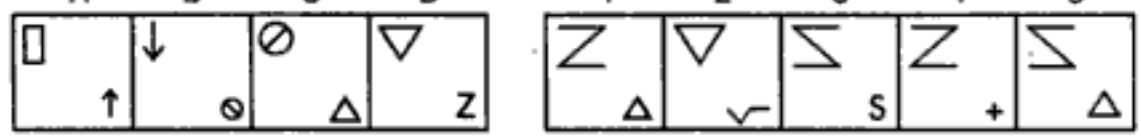

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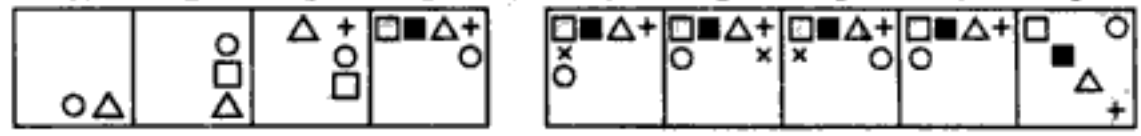

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PROBLEM FIGURES ANSWER FIGURES

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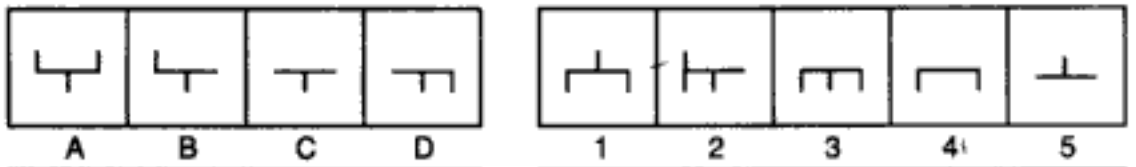
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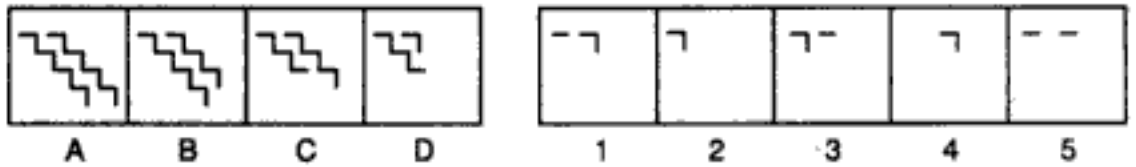
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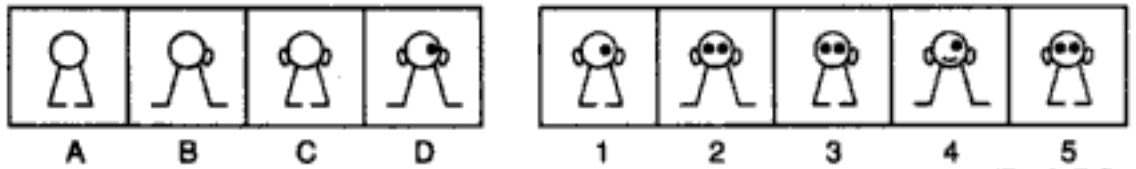
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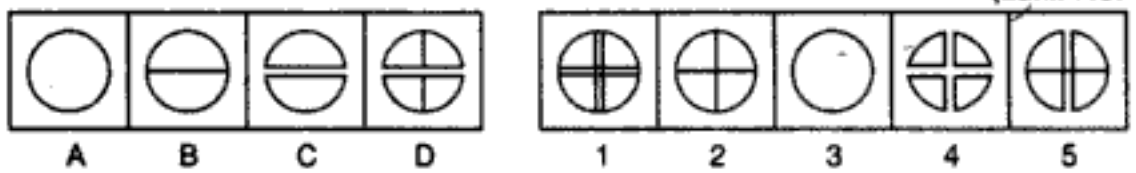
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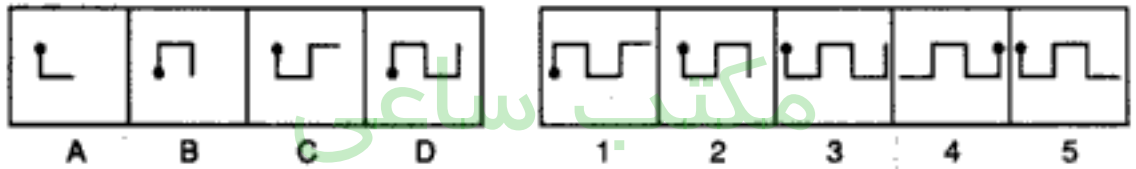
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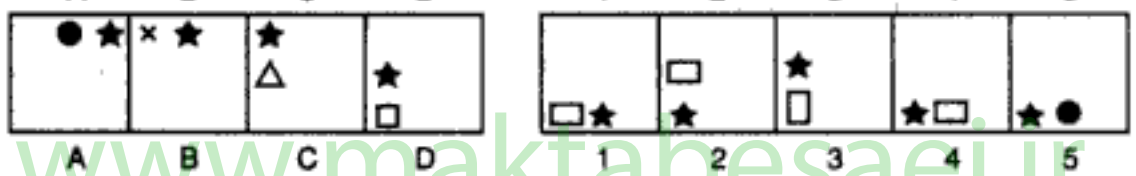
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(B.S.R.B. 1991)

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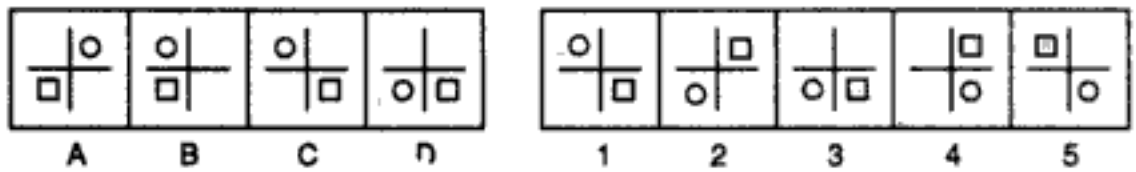
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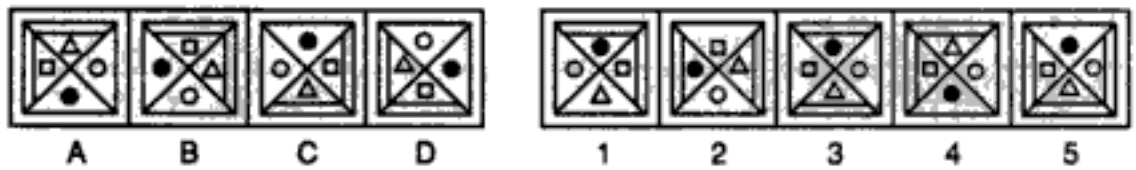
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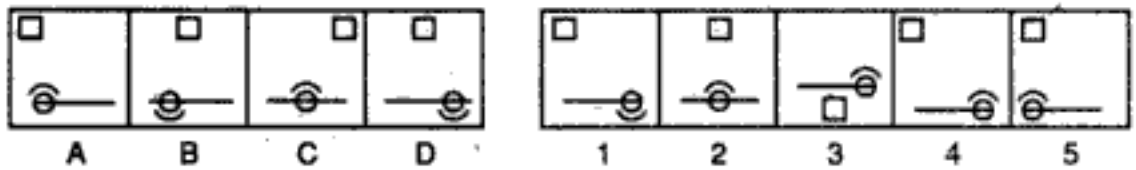
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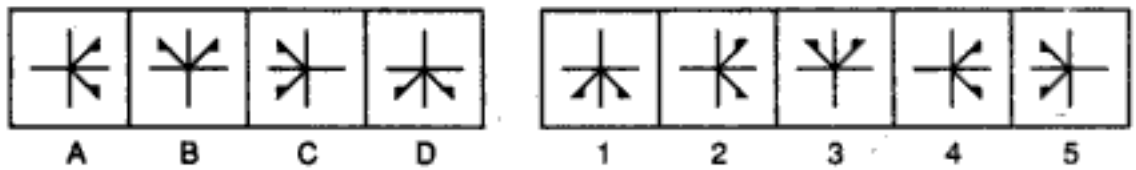
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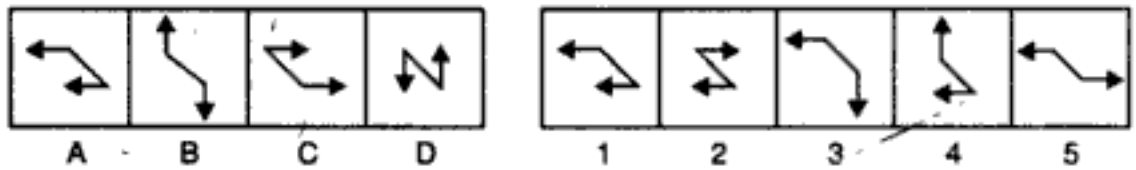
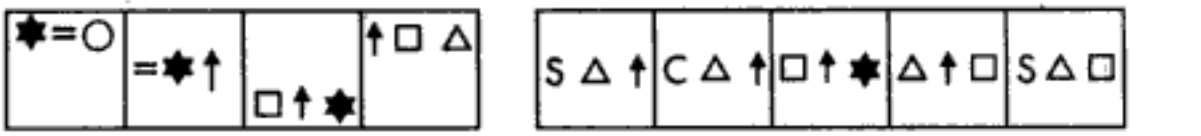
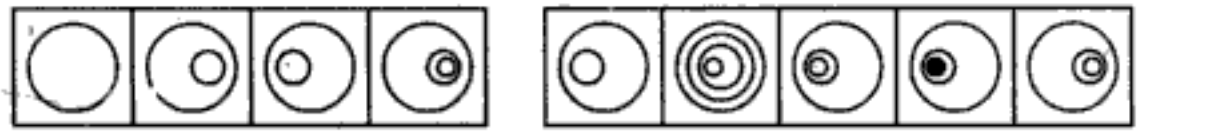
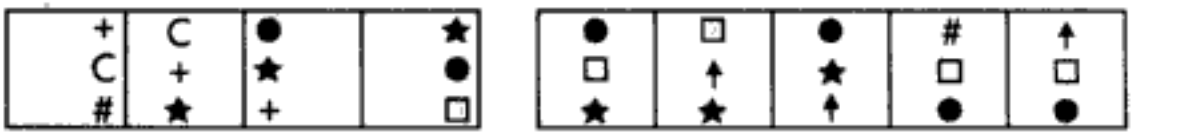

A B C D 1 2 3 4 5

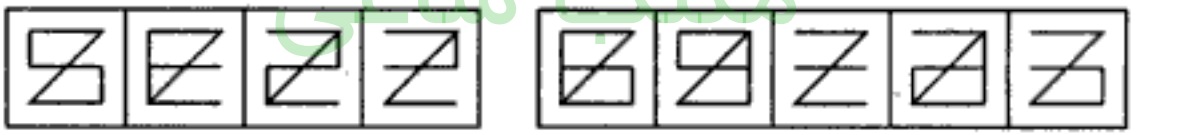
PROBLEM FIGURES ANSWER FIGURES

63. 
A B C D 1 2 3 4 5
(Bank P.O. 1991)

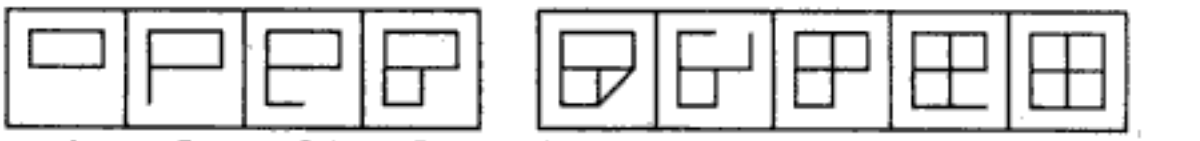
64. 
A B C D 1 2 3 4 5
(Bank P.O. 1989)

65. 
A B C D 1 2 3 4 5

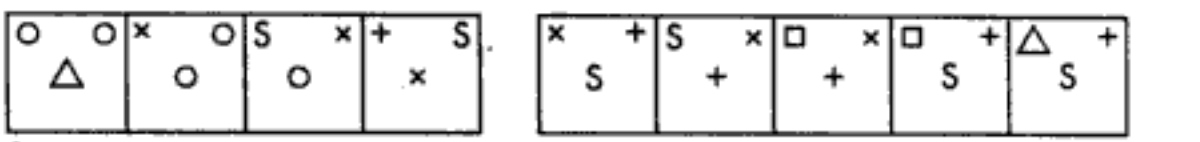
66. 
A B C D 1 2 3 4 5
(Bank P.O. 1990)

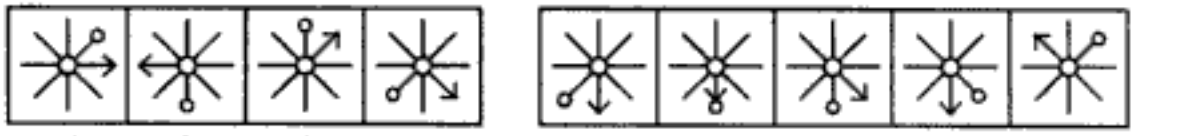
67. 
A B C D 1 2 3 4 5

68. 
A B C D 1 2 3 4 5
(Bank P.O. 1991)

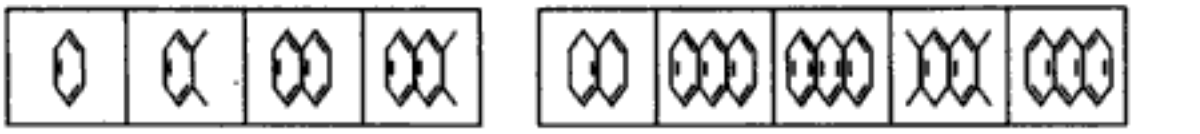
69. 
A B C D 1 2 3 4 5

70. 
A B C D 1 2 3 4 5
(B.S.R.B. 1990)

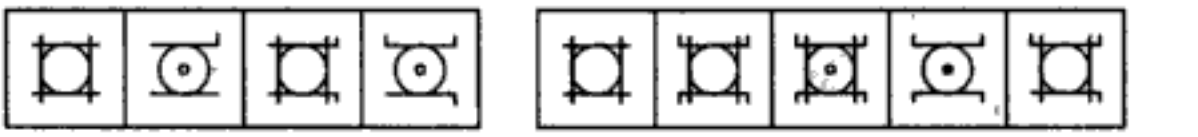
71. 
A B C D 1 2 3 4 5

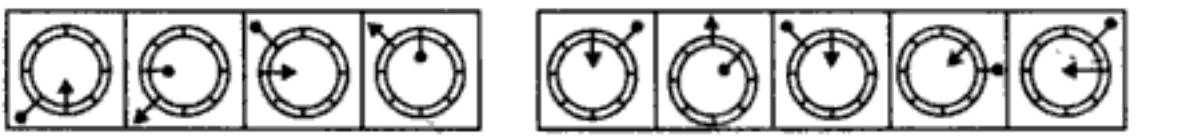
72. 
A B C D 1 2 3 4 5

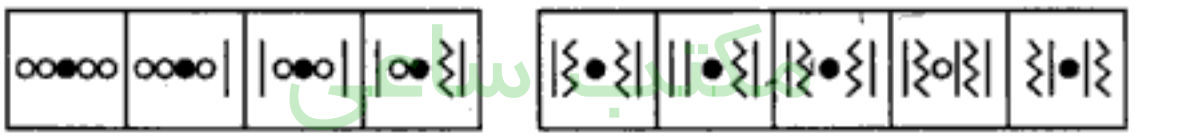
PROBLEM FIGURES ANSWER FIGURES

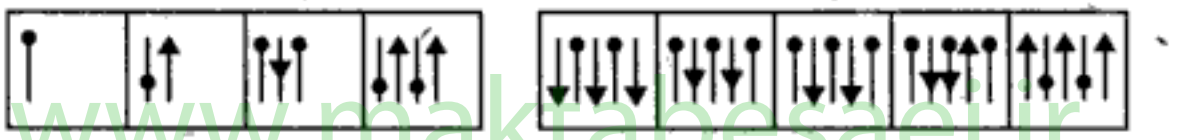
73. 
A B C D 1 2 3 4 5
(I. Tax & Central Excise, 1989)

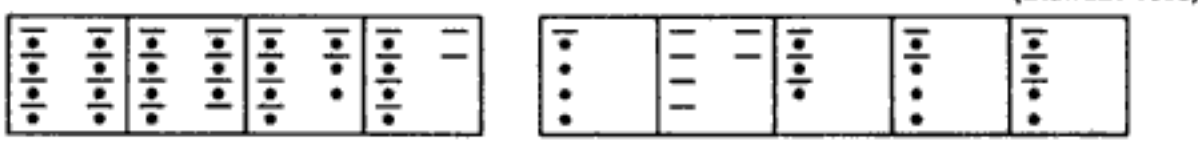
74. 
A B C D 1 2 3 4 5

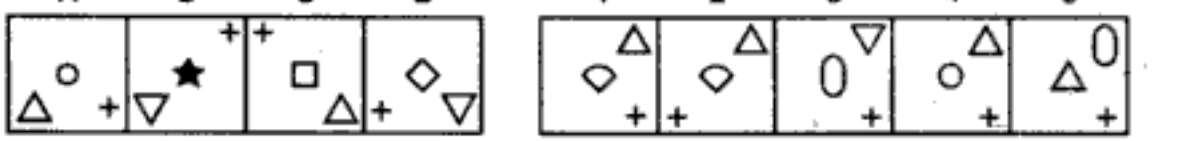
75. 
A B C D 1 2 3 4 5
(S.B.I.P.O. 1992)

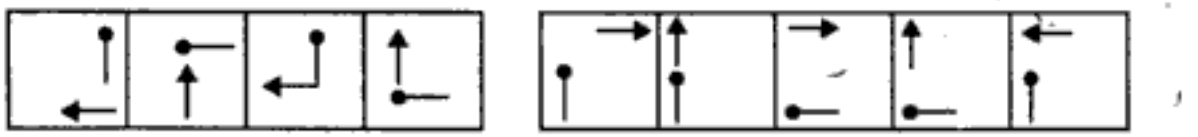
76. 
A B C D 1 2 3 4 5

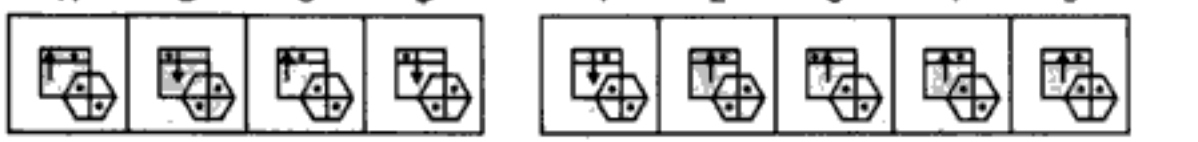
77. 
A B C D 1 2 3 4 5

78. 
A B C D 1 2 3 4 5
(B.S.R.B. 1995)

79. 
A B C D 1 2 3 4 5

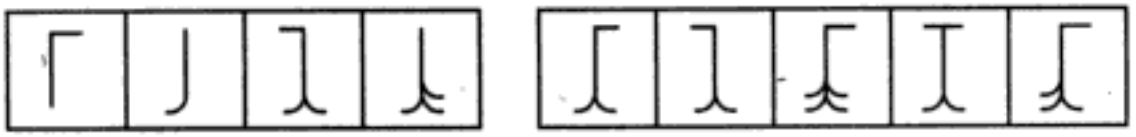
80. 
A B C D 1 2 3 4 5
(Bank P.O. 1991)

81. 
A B C D 1 2 3 4 5

82. 
A B C D 1 2 3 4 5

PROBLEM FIGURES ANSWER FIGURES

83.



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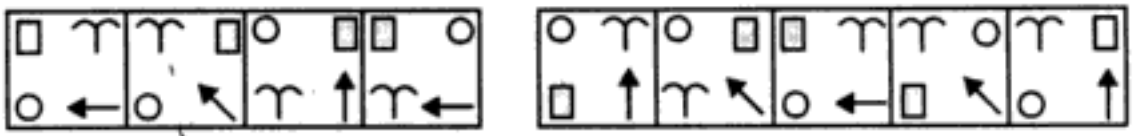
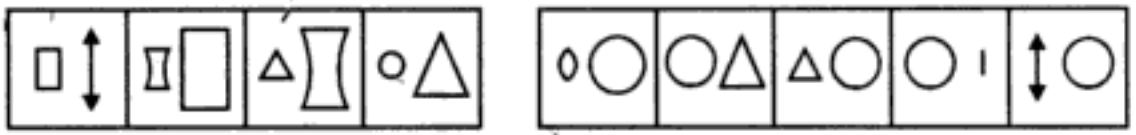


(R.B.I. 1991)

85.

86.



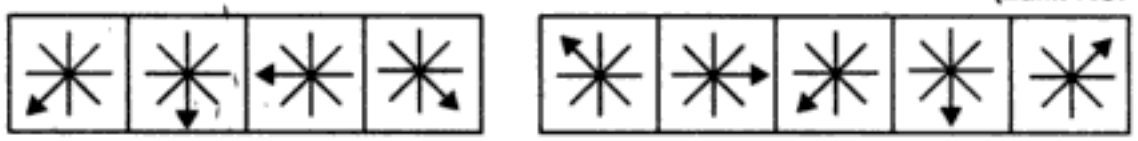
(B.S.R.B. 1990)

87.

88.

(Bank P.O. 1991)

89.



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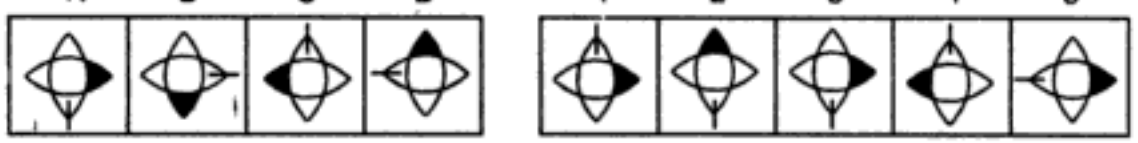

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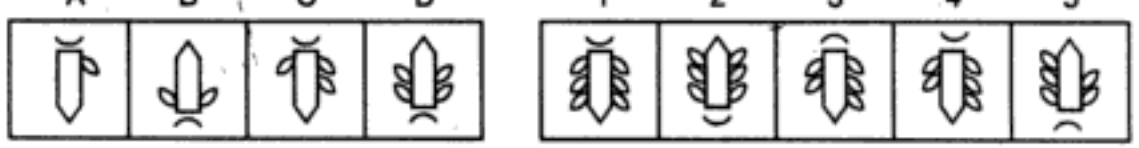
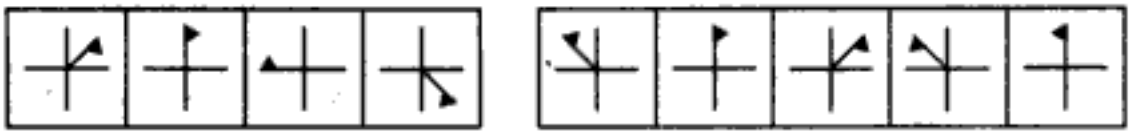


(Hotel Management, 1991)

92.

PROBLEM FIGURES ANSWER FIGURES

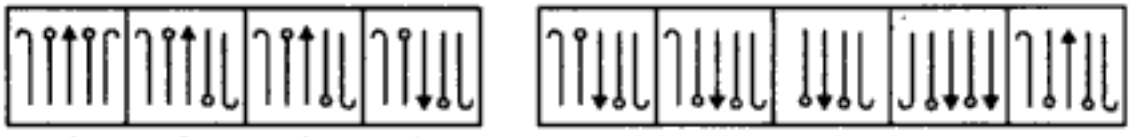
93.



A B C D 1 2 3 4 5

(Bank P.O. 1991)

94.



A B C D 1 2 3 4 5

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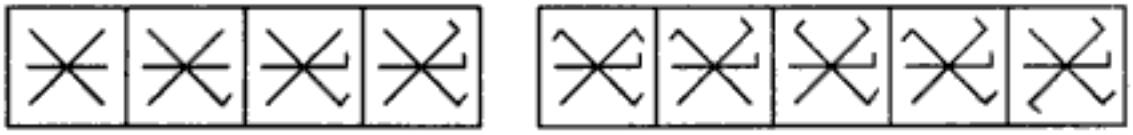
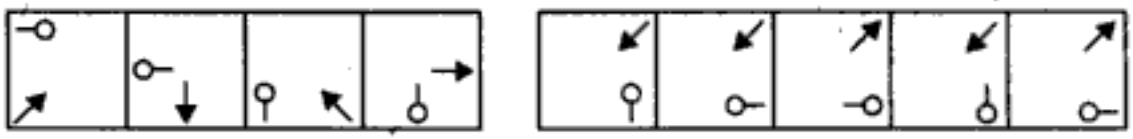


A B C D 1 2 3 4 5

(Bank P.O. 1991)

96.



A B C D 1 2 3 4 5

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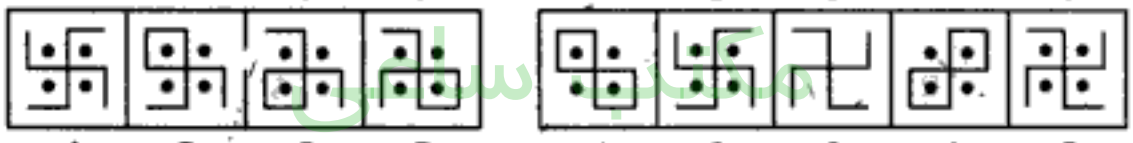

A B C D 1 2 3 4 5

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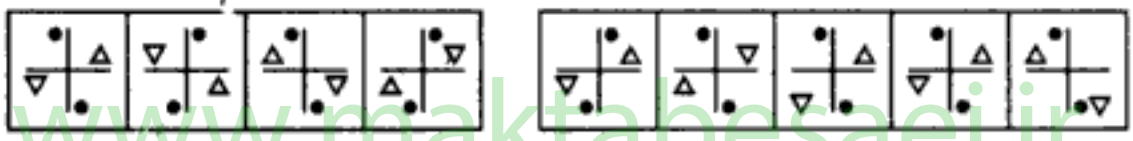
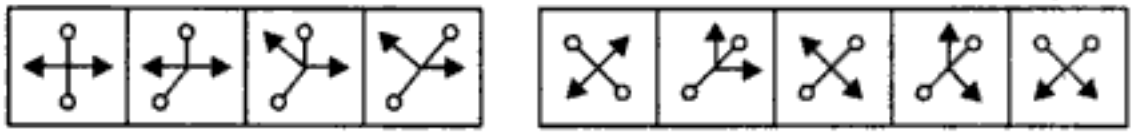


A B C D 1 2 3 4 5

(S.B.I. P.O. 1992)

99.



A B C D 1 2 3 4 5

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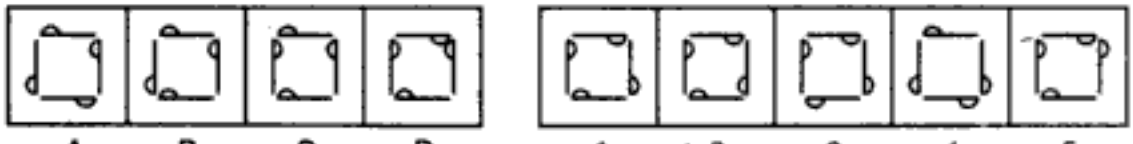
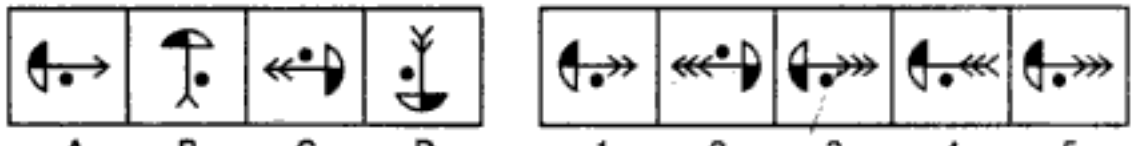


A B C D 1 2 3 4 5

101.

A B C D 1 2 3 4 5

102.



A B C D 1 2 3 4 5

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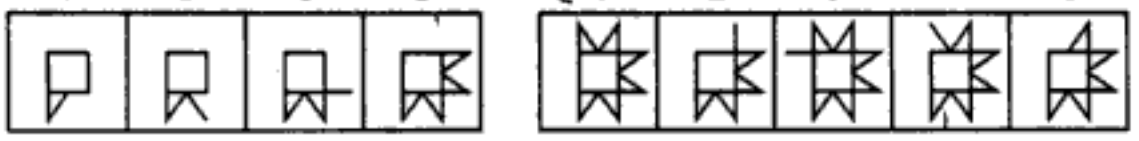
PROBLEM FIGURES ANSWER FIGURES

125.

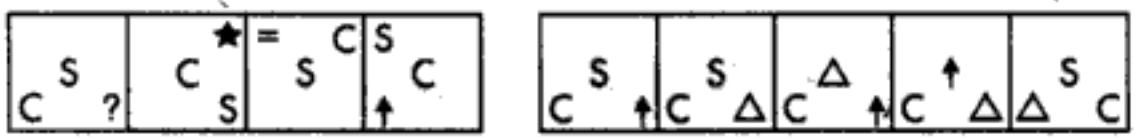
126.

127.

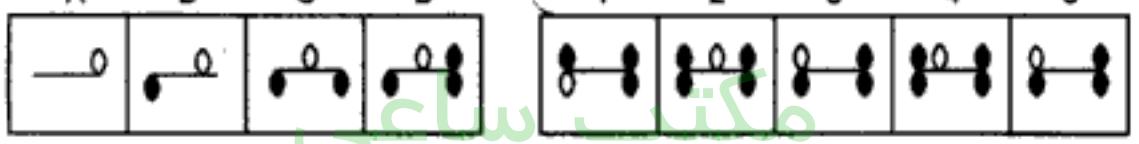


(R.B.I. 1991)

128.

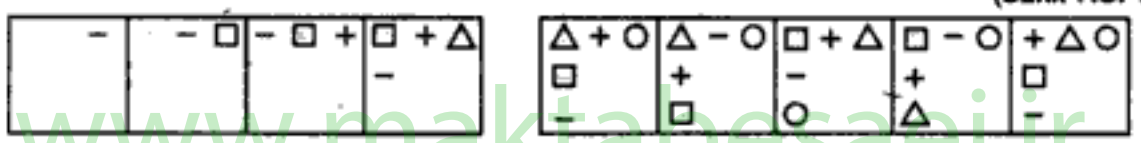


129.



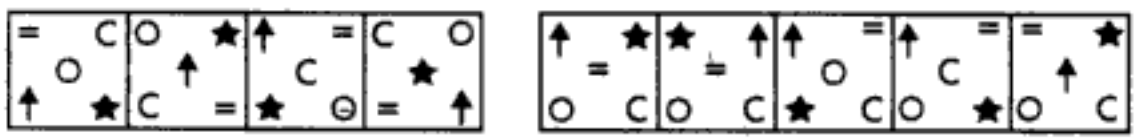
(Bank P.O. 1991)

130.



131.

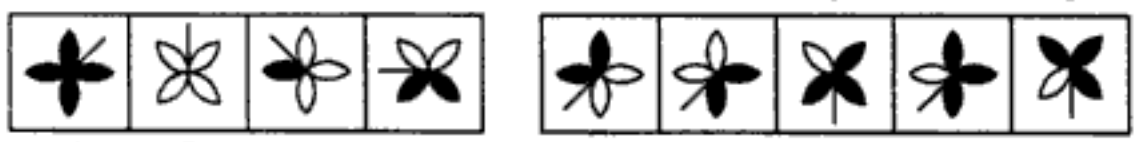
132.



(Bank P.O. 1990)

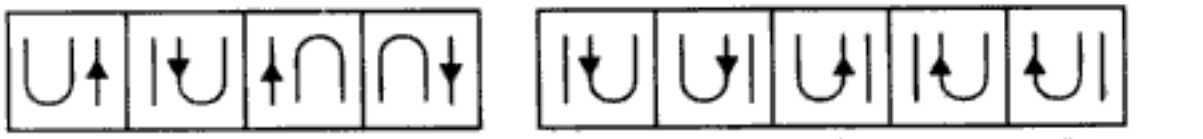
133.

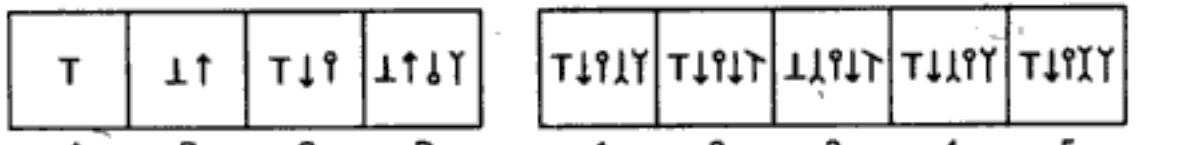
134.



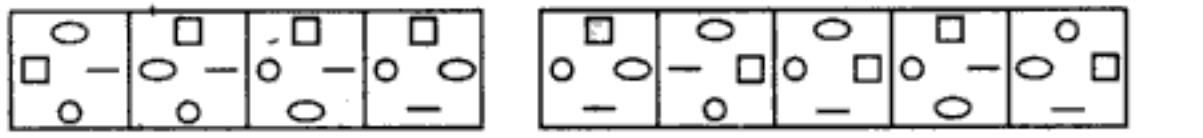
(Bank P.O. 1991)

PROBLEM FIGURES ANSWER FIGURES

165.

A B C D 1 2 3 4 5

166.

A B C D 1 2 3 4 5

(Bank P.O. 1991)

167.

A B C D 1 2 3 4 5

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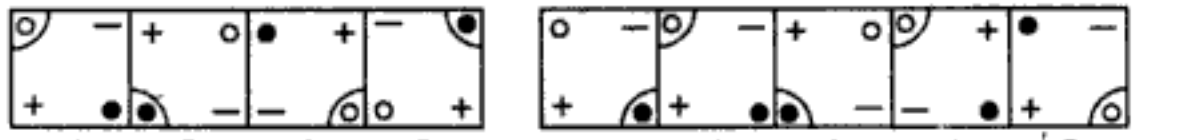

A B C D 1 2 3 4 5

169.

A B C D 1 2 3 4 5

170.

A B C D 1 2 3 4 5

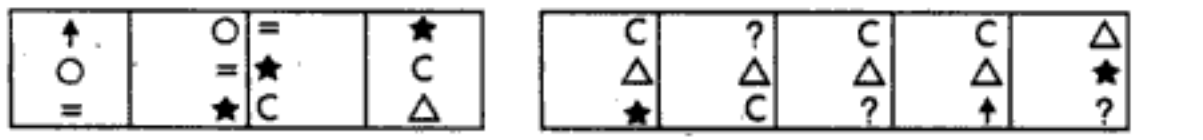
171.

A B C D 1 2 3 4 5

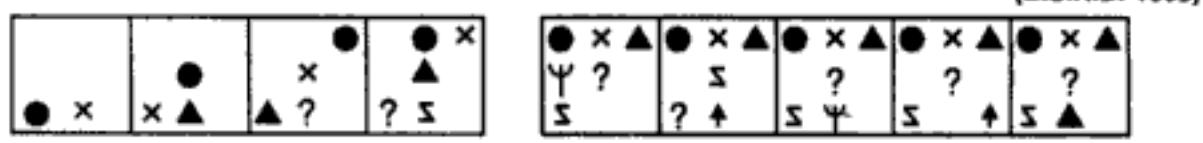
(Bank P.O. 1994)

172.

A B C D 1 2 3 4 5

173.

A B C D 1 2 3 4 5

(B.S.R.B. 1995)

174.

A B C D 1 2 3 4 5

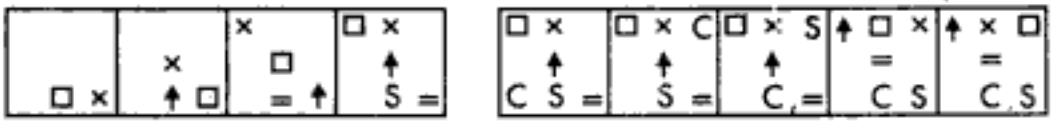
PROBLEM FIGURES ANSWER FIGURES

175.

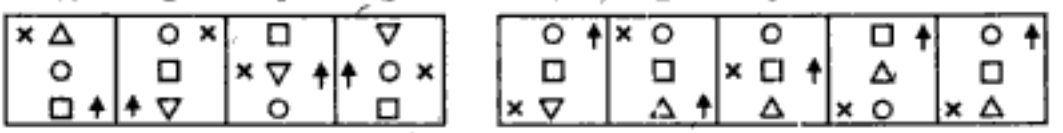
176.

(B.S.R.B. 1990)

177.



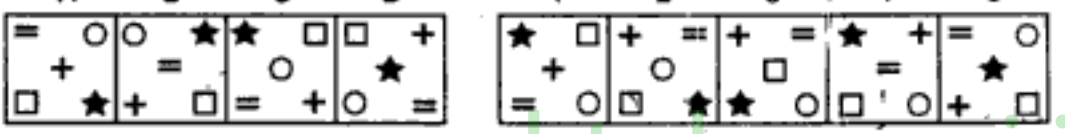
178.



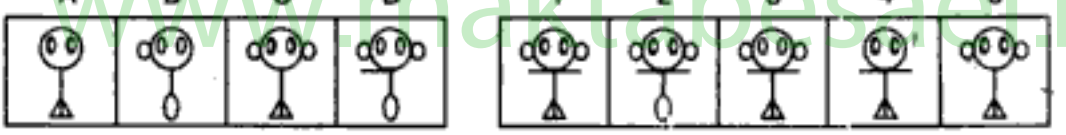
(R.B.I. 1991)

179.

180.



181.



(Bank P.O. 1991)

Directions : ***In each of the following questions, a figure series is given out of which the last is missing. Identify from amongst four responses which one would complete the series.***

182.

(Asstt. Grade, 1996)

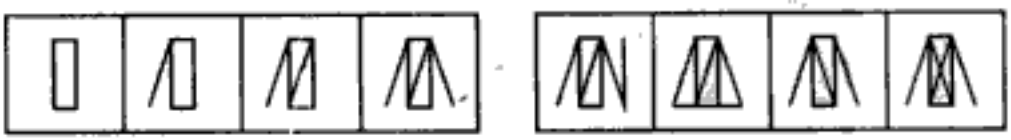
183.

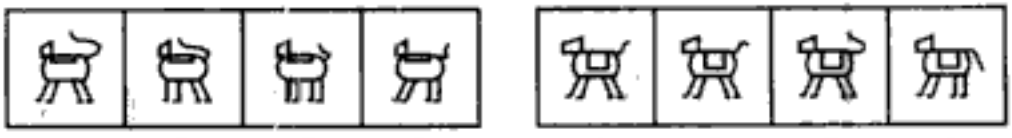
(C.B.I. 1995)

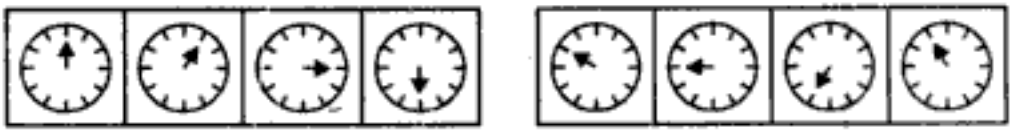
184.

(Railways, 1993)

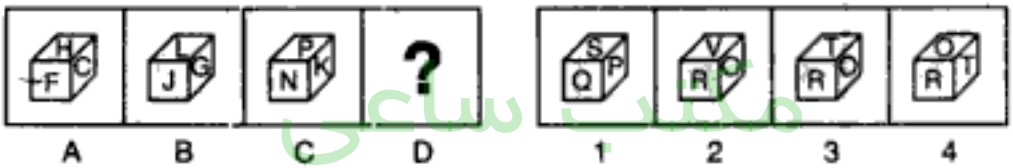
PROBLEM FIGURES ANSWER FIGURES

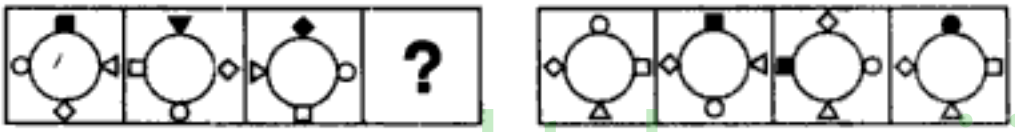
185. 
A B C D 1 2 3 4 (C.B.I. 1993)

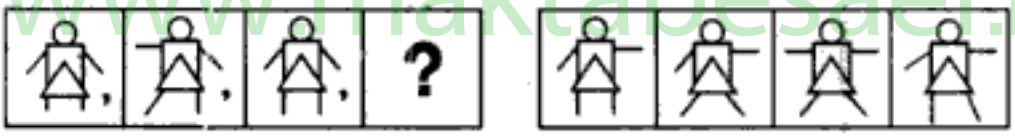
186. 
A B C D 1 2 3 4
(Hotel Management, 1991)

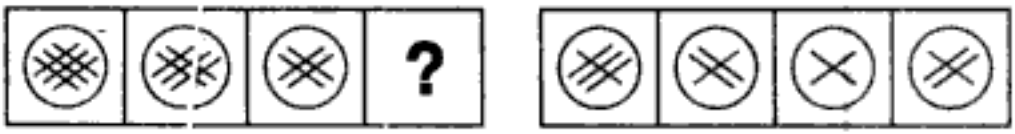
187. 
A B C D 1 2 3 4 (I. Tax, 1996)

188. 
A B C D 1 2 3 4 (Railways, 1993)

189. 
A B C D 1 2 3 4

190. 
A B C D 1 2 3 4

191. 
A B C D 1 2 3 4 (Asstt. Grade, 1995)

192. 
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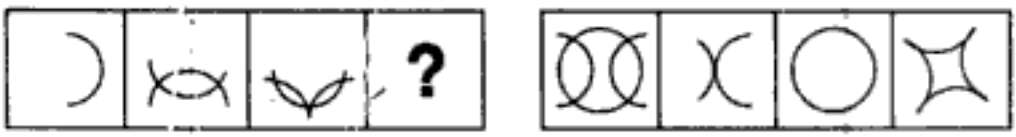
193. 
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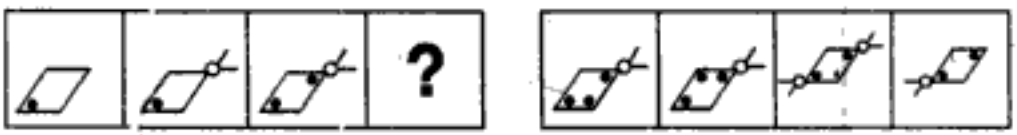
194. 
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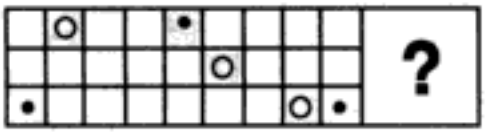
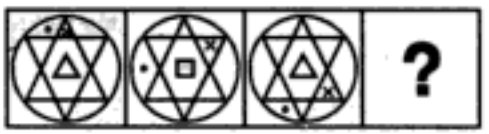
PROBLEM FIGURES ANSWER FIGURES

195. 

(C.B.I. 1994)

196. 

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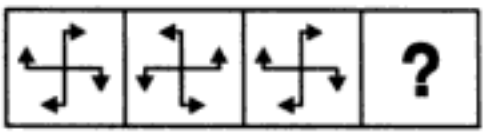
(C.B.I. 1993)

198. 

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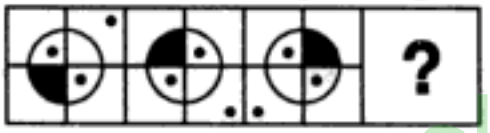
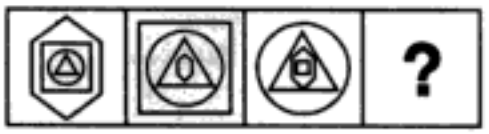
199. 

(Section Officers', 1993)

200. 

(C.B.I. 1994)

26. (5) : One line is removed from one end of the figure and one line is added to the other end of the figure, in each step.

27. (4) : The shading moves ACW one, two, three, ... steps sequentially.

28. (3) : The line inside the square rotates by 45° and so does the arrow. But each time, the arrow reverses its direction.

29. (1) : Two identical signs appear while one of the initially existing identical signs disappears in each step.

30. (4) : In one turn, the symbols move one step CW. In the next turn, they move two steps CW and a new symbol is added behind the pre-existing symbols. The process repeats.

31. (1) : Similar figure appears in alternate steps and each time it reappears, it gets rotated through an angle of 180°.

32. (5) : Lines are removed from the L.H.S. and R.H.S. alternately.

33. (3) : The circle moves two steps ACW while the arc rotates 90° ACW and moves two steps CW in each step.

34. (1) : The cross moves vertically down in one step and the '–' sign moves to the left in the alternate step.

35. (3) : The circle and the square move end to end in an ACW direction, while triangle moves up and down alternately.

36. (2) : Figure rotates 90° CW in each step. So, fig. (A) should repeat.

37. (5) : The exchange of positions of signs takes place, first up and down and then sideways.

38. (5) : The small lines at the two ends of the central vertical line first open out 45° successively and then converge again by 45° successively.

39. (3) : In each step, the shading moves one step CW and the dot and the arrow move one step ACW.

40. (5) : The similar central figures repeat in alternate steps and the trapezium resting on the side of the square boundary, moves 90° CW in each step.

41. (4) : Each time, all the existing arcs get reversed and a new arc is added moving two, two, one, two, ... steps clockwise sequentially.

42. (3) : The same figure repeats in every three steps. So, fig. (B) should repeat.

43. (5) : The circle moves to the diagonally opposite corner each time and the rectangle moves one, two, two, one, ... steps CW sequentially.

44. (4) : In one step, a pin is added and in the next step, the figure rotates 90° ACW. This goes on alternately.

45. (1) : In first step, a circle is added; in the second step, a triangle is added and in the third step, a square is added. The three steps are repeated sequentially.

46. (4) : In each step, one of the circles gets black and moves to a corner of the square boundary.

47. (5) : The square, triangle and circle move in the order 

The element that comes to the centre, gets enlarged and the element that comes to the upper-left corner becomes smaller. The '+' sign moves up and down vertically.

48. (4) : The cross moves half a side of the square boundary, in an ACW direction and other element moves to the adjacent corner CW in each step.

49. (3) : A line is added to the main figure in each step. The element inside the figure moves to the other side in one step and gets replaced by a new element in the next step. This goes on alternately.

50. (3) : The element in the lower-right corner gets inverted and enlarged and moves to the upper left corner and a new element appears in the lower-right corner in each step.

51. (*1*) : A new symbol appears as the first symbol (counting in a CW direction) and then the last symbol becomes the first symbol. This goes on, in each step.

52. (*3*) : One line is removed from the figure in each step. This goes on for two steps and then one line is added to the figure in each step and this goes on for two steps. These four steps are repeated sequentially.

53. (*4*) : Two lines from R.H.S. element, three lines from L.H.S. element, four lines from R.H.S. element, five lines from L.H.S. element, ... are removed sequentially.

54. (*5*) : One ear, one ear, one eye, one eye ..... are added sequentially. Also, the legs are spread out and brought in alternately.

55. (*4*) : In one step, a line appears dividing the existing elements into two equal parts each and in the next step, the parts of the elements separate out at the dividing line. This goes on alternately.

56. (*5*) : In each step, the fig. gets inverted and a line is added to it.

57. (*4*) : Both the star and the other fig. move half a side of the square boundary in an ACW direction in each step. The element, other than the star, gets replaced by a new element in each step.

58. (*2*) : The circle and the square move one step ACW alternately.

59. (*4*) : The outer frame is rotated 90° CW and the symbols inside it move one step each time.

60. (*4*) : The square moves horizontally from upper left corner to the upper right corner in two steps and back to the upper-left corner in two steps and so on. The circle moves horizontally from left to right in four steps. The arc appears above and below the circle alternately.

61. (*4*) : Similar figure appears alternately and each time fig. (A) reappears, it gets laterally inverted while each time fig. (B) reappears, it gets inverted

62. (*1*) : In each step, the upper arrow rotates 90° CW while the lower arrow rotates 90° ACW.

63. (*5*) : All the elements move downwards in each step. Also in one step, the first two elements interchange positions and the third is replaced by a new one and in the alternate step, the first element is replaced by a new symbol and the other two elements interchange positions.

64. (*3*) : In one step, all the circles move to the right side and a new circle is introduced inside the existing circles and in the next step all the circles move to the left. The two steps are repeated alternately.

65. (*5*) : The fig. rotates 45° ACW in each step. Also, the half pin reverses its direction in one step and in the next step, the entire bent pin reverses direction.

66. (*5*) : All the symbols move together from right to left. Also, in one step, the two upper symbols interchange positions and the third symbol gets replaced by a new symbol and in the alternate step, the two lower symbols interchange positions and the upper symbol gets replaced by a new one.

67. (*3*) : In first step, a line from the lower part of the fig. moves to the other side; in the second step, a line from the upper part moves to the other side; in the third step, a line from the lower part is lost. So in the fourth step a line from the upper part should be removed.

68. (*3*) : Arcs curved in the same direction are introduced sequentially at upper left, lower right, lower left and upper right positions. Also, in each step, all the existing arcs get rotated through 180°.

69. (*3*) : In each step, a line is added to the figure and this line starts from the point where the last added line ends.

70. (*2*) : In first step, the arrow reverses its direction and a line segment is introduced. In each subsequent step, all the existing arrows reverse their directions, an arrowhead appears at one end of the line segment (in such a way that this arrow

120. (*2*) : In each step, all the symbols move towards the R.H.S. and once in the rightmost position, they move to the leftmost position in the next step. Also, in each step, the first, second and third symbols become the third, first and second symbols respectively and the symbol that reaches the lowermost position, gets replaced by a new one.

121. (*3*) : Triangle exchanges place with all the elements one by one, while moving ACW.

122. (*3*) : Each symbol moves only one step each time; triangle and square move vertically up and down while star and circle move along the diagonal.

123. (*4*) : All the symbols move in a set order i.e. along the figure Σ and in each step the symbol (if any) that reaches the upper-right corner, is removed.

124. (*2*) : The symbol '?' moves left and right sequentially and in each step, each one of the other three symbols moves to the adjacent side in an ACW direction.

125. (*5*) : In each step, the symbol moves 90° ACW and gets replaced by a new one. Also, half, one, one & a half, two, ... lines are added sequentially to the outer figure.

126. (*3*) : In each step, the lowermost element becomes the uppermost and the other two elements move down and the element that reaches the lowermost position, gets replaced by a new one.

127. (*1*) : One, two, three, four, ... lines are added to the figure sequentially.

128. (*2*) : In the first step, the symbols move in the order  and the symbol that reaches the cncircled corner, gets replaced by a new one. In subsequent steps, the symbols move in the order obtained by rotating the above order 90° ACW each time.

129. (*4*) : One black leaf is added to the figure in each step and the white leaf moves from right to left sequentially.

130. (*5*) : In each step, all the existing symbols move half a side of the square boundary in an ACW direction and a new symbol appears in the upper-right position.

131. (*4*) : In each step, the larger figure is removed; the smaller figure is made larger and a new small figure is introduced.

132. (*2*) : In each step, the symbols move in the order  .

133. (*3*) : The upper arrow rotates 135° CW in each step; the lower arrow rotates 45° ACW, 45° CW, 45° CW, 45° ACW, ... The middle element gets laterally inverted in each step and gets replaced by a new one in every second step.

134. (*4*) : In each step, the figure rotates 45° ACW. Also, in the first step all the leaves become white and then they become black one by one in subsequent steps.

135. (*2*) : Arc moves CW from side to side and itself turns 90° ACW while the arrow moves ACW from side to side and once indicates outside the square and in the next step it indicates inside the square.

136. (*4*) : The shading moves one, two, three, four, ... steps ACW sequentially. The dot moves one step CW, two steps ACW, three steps CW, ... sequentially.

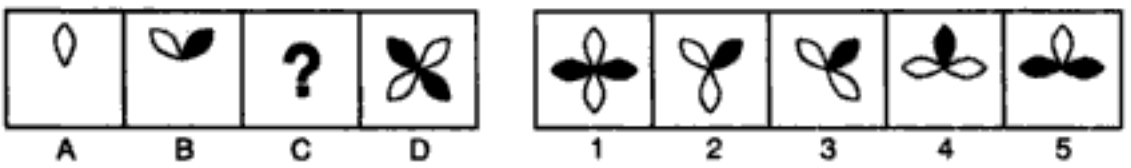
137. (*2*) : In first step, the upper right & lower left symbols get inverted; in the second step, the other two symbols get inverted. In the third step, the upper right and lower left symbols interchange positions. So in the fourth step, the other two symbols will interchange positions.

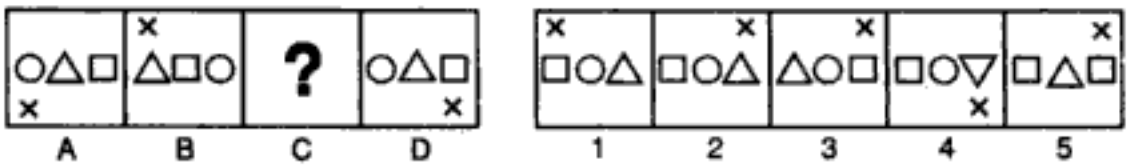
138. (*5*) : In each step, the outer symbol becomes the inner symbol and a new symbol appears outside. Also, the two symbols move ACW sequentially.

139. (*1*) : In each step, one of the radii and one-eighth of the circle is lost and a dot is introduced.

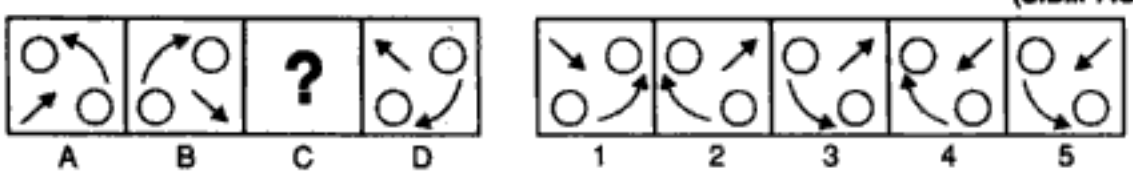
PROBLEM FIGURES ANSWER FIGURES

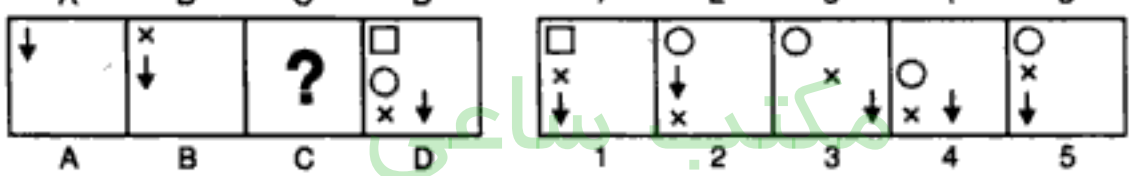
14. 

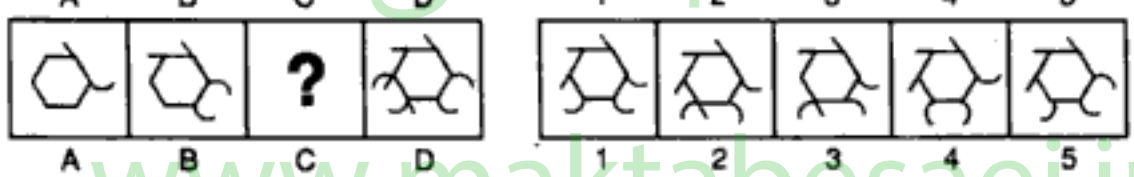
15. 

16. 

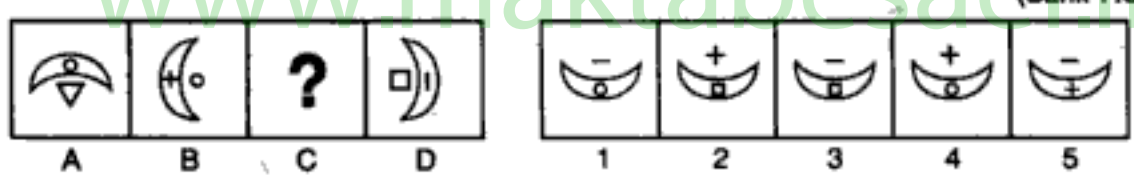
(S.B.I. P.O. 1990)

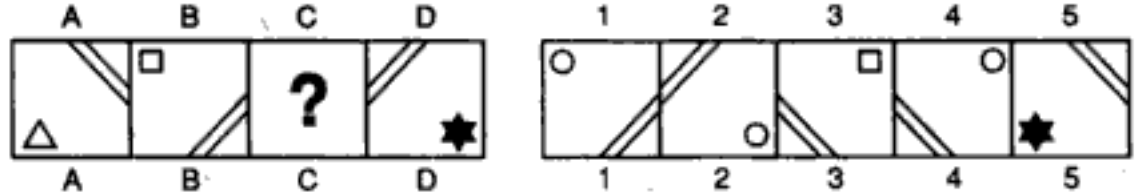
17. 

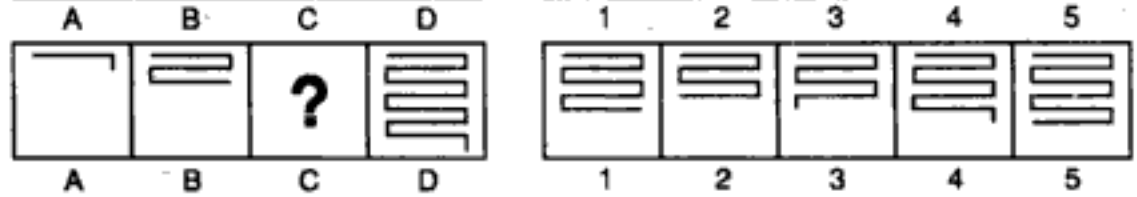
18. 

19. 

(Bank P.O. 1994)

20. 

21. 

22. 

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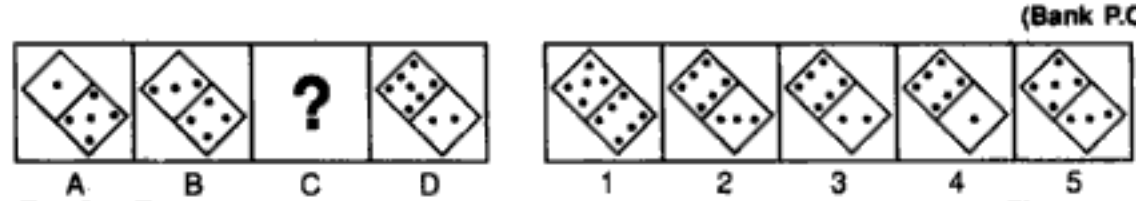
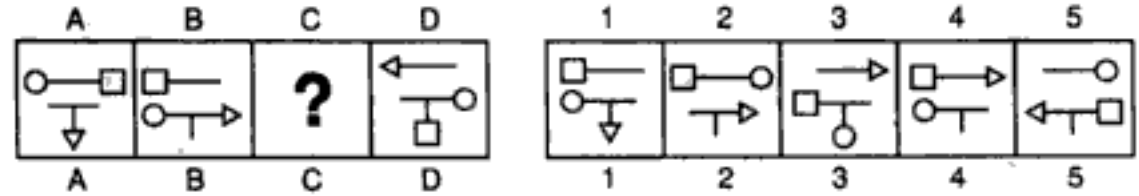
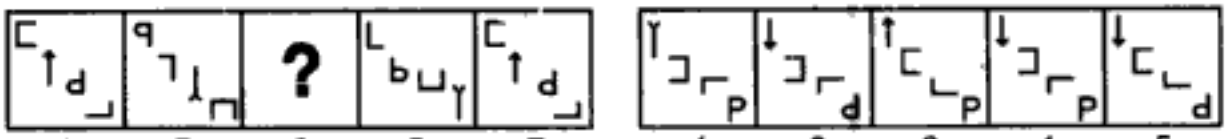
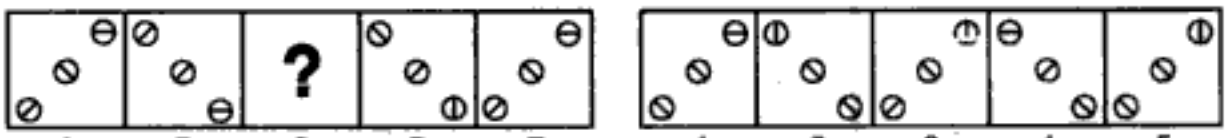
23. 

24. 

PROBLEM FIGURES ANSWER FIGURES

43. 
A B C D E 1 2 3 4 5
(Bank P.O. 1996)

44. 
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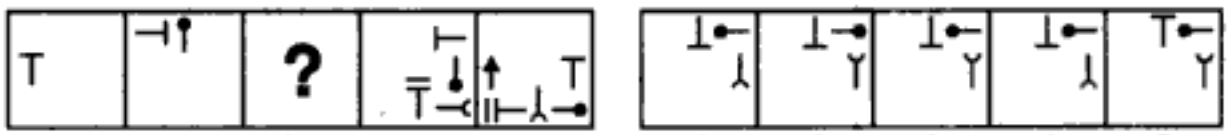
45. 
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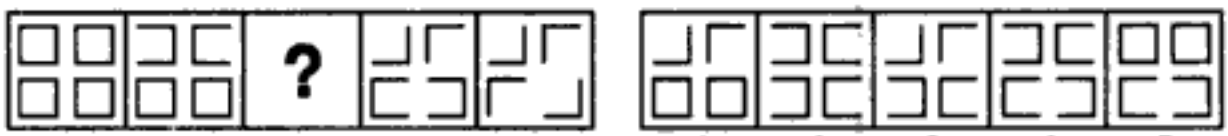
(Bank P.O. 1995)

46. 
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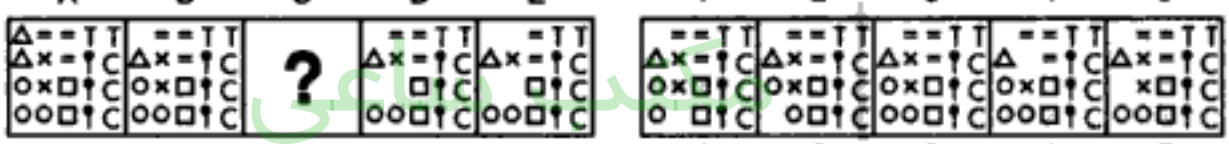
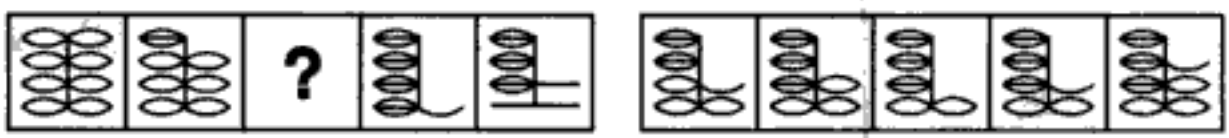
47. 
A B C D E 1 2 3 4 5
(Bank P.O. 1994)

48. 
A B C D E 1 2 3 4 5

49. 
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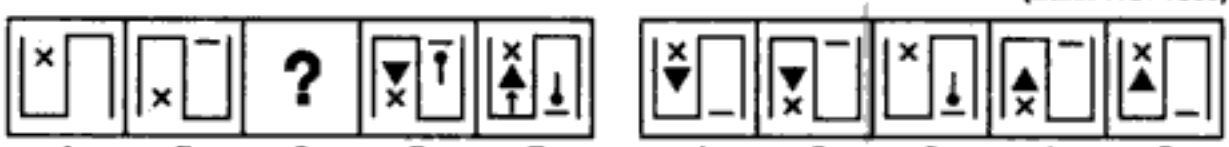
(Bank P.O. 1995)

50. 
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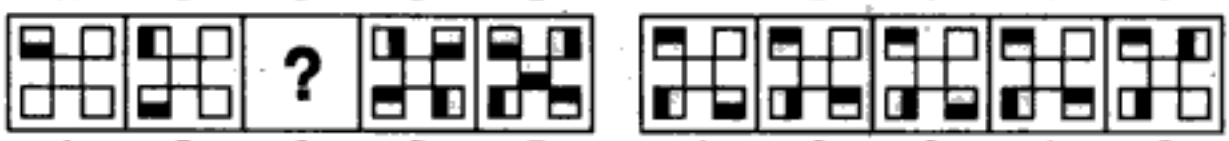
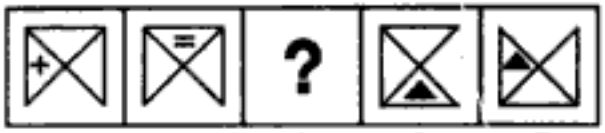
51. 
A B C D E 1 2 3 4 5
(Bank P.O. 1996)

52. 
A B C D E 1 2 3 4 5

PROBLEM FIGURES ANSWER FIGURES

63.



A B C D E 1 2 3 4 5

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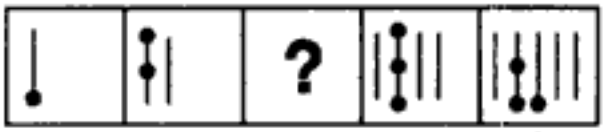


A B C D E 1 2 3 4 5

(Bank P.O. 1996)

26. (3) : The squares in the upper left, lower left and lower right corners rotate 90° CW while the one in the upper right corner rotates 90° ACW.

27. (4) : The arrow on the left exchanges its position with the other arrows one by one and both the arrows which exchange the positions reverse their directions.

28. (5) : One triangle is removed each time and a line is introduced inside the square. The remaining triangles are inverted.

29. (4) : The triangle moves from left to right and back step by step and gets inverted each time; the circle moves two steps each time and gets light and dark alternately; the square moves from left to right and back step by step.

30. (5) : In each step, all the pre-existing pins rotate through 180° and a new pin is added in a set order.

31. (4) : The black shading moves one step ACW and the curved line shading moves two steps CW in each turn.

32. (3) : Each of the arrows rotates 90° CW in every step.

33. (3) : The two pairs of symbols interchange positions in one step and a new symbol is added to each pair in the next step.

34. (3) : In each step, the existing straight line is replaced by a square and an extra straight line is introduced. In each step, the existing straight line is replaced by a square and an extra straight line is introduced.

35. (1) : In each step, the existing straight line is replaced by a square and an extra straight line is introduced.

36. (5) : Arcs on the R.H.S. and L.H.S. of the straight line are inverted in alternate steps.

37. (5) : The innermost element becomes the outermost and the outermost becomes the middle element while the innermost element is replaced by a new one.

38. (4) : In the first step, one of the identical symbols is lost and two identical symbols are added; in the second step, one of the added identical symbols is lost and three identical symbols are added; and the procedure goes on.

39. (1) : One extra octant (one-eighth part) of the circle is shaded ACW in each step. The figure rotates 45° ACW and 90° ACW alternately.

40. (1) : Each one of the 'U'-shaped figure rotates 90° CW in each step.

41. (5) : The fig. is rotated 45° ACW and 90° ACW alternately. Also, half a leaf is added CW to the figure in each step.

42. (2) : The symbols move ACW each time and the symbol that reaches the L.H.S. position gets replaced by a new symbol.

43. (4) : The first, second, third and fourth symbols from the top become fourth, third, first and second symbols respectively. The 'P'- shaped symbol gets inverted and laterally inverted alternately; the arrow gets inverted and its arrow-head also gets inverted in each step; the 'L'-shaped symbol rotates through 180° and gets inverted alternately and the 'U' shaped rotates 90° CW in each step.

44. (5) : The circles get arranged along the two diagonals alternately. The diameter of the uppermost circle rotates 45° ACW in each step; of the middle circle rotates 90° and that of the lowermost circle rotates 45° CW in each step.

45. (5) : The existing symbols move a distance equal to half the side of the bounding square and a new symbol is added in each step. The first, third, fifth, symbols rotate 90° CW in each step while the second, fourth, ... symbols rotate 90° ACW in each step.

46. (4) : Two lines are removed from the two upper and two lower squares alternately in a set pattern.

47. (5) : The number of different types of symbols is reduced by one in a sequence.

48. (5) : The fig. rotates 90° CW, 135° ACW, 180° CW, 225° ACW, sequentially. The number of lines at the end of the arrow decreases by 1, increases by 2, decreases by 3, ... sequentially.

ANSWERS (EXERCISE 1D)

1. (3) : One of the convex portions of the broken circle turns concave in each step and once all are concave, these curved lines change into straight lines in a sequence. But to establish this sequence, figures (3) and (4) have to be interchanged.

2. (2) : The number of squares increases step by step and then these squares change into circles stepwise. But this series wll be established only if fig. (2) and fig. (3) are interchanged.

3. (5) : In every step the outer figure is lost, inner figure becomes larger and a new small figure is introduced inside it. In order to complete this series, no figures are required to be interchanged.

4. (5) : The horizontal coincident lines gradually diverge out and finally coincide vertically and then again diverge. The sequence is established as such.

5. (3) : One part of the circle is lost in each step. By interchanging figures (3) and (4), the series will be complete.

6. (1) : One of the circles gets dark in each step and once all of them get shaded, they get replaced stepwise by white squares. So, figures (1) and (2) need to be interchanged.

7. (5) : The number of sides of the outer figure increases by one, each time. Also, an extra small circle is added in every two steps. For this, no two figures need to be interchanged.

8. (4) : Inverted and erect triangles are added alternately and all the triangles move CW from side to side. For this, figures (4) and (5) have to be interchanged.

9. (1) : One of the arms of the figure changes into an arrow in each step and once all of them change into arrow they get reversed in direction stepwise. For this, figures (1) and (2) need to be interchanged.

10. (3) : Straight lines and curved arrows are added alternately. Figures (3) and (4) have to be inter-changed to complete this series.

11. (4) : The dancer initially stands with his arms out stretched and legs at rest. He then bends his left arm and stretches out his left leg. In next step, he bends his other arm and subsequently, comes to his initial position. This procedure is then repeated with other arm and leg. To complete this series figures (4) and (5) have to be interchanged.

12. (1) : In one step, a dotted line is formed in the existing figure and in the next step, the figure divides at the dotted line and the smaller of the two figures is lost. To establish this series, figures (1) and (4) have to be interchanged.

13. (2) : If figures (2) and (3) are interchanged, then a series would be established, in which, a rectangle appears in a circle in one step and then the circle appears in the rectangle in the second step. In the next step again the rectangle appears in the circle and the figure is rotated 45° CW.

14. (2) : One side of the hexagon is lost every time and plus and minus signs are added alternately. So, figures (2) and (5) need to be interchanged.

15. (1) : In one step, a triangle is converted into the other symbol and in the next step a new triangle is added. This series will be established if figures (1) and (2) are interchanged.

16. (3) : The gymnast initially stands with arms outstretched and legs at rest. In subsequent step, one of his arms get raised up and a leg stretches out. He then bends over the ground, himself supported upon one arm and one leg. Then, he leaves the support of the leg and balances himself on one hand only. Lastly, he rotates his body to display a hand stand. In order to establish this series, figures (3) and (4) have to be interchanged.

17. (5) : Two bent pins are added to the left in one step and then one of these two gets on to the right side in the next step. This procedure is repeated. No two figures need to be interchanged to complete the series.

18. (4) : The number of sides of the figure and the number of plus signs increases by one in each step. So, figures (4) and (5) need to be interchanged.

19. (2) : Existing symbols move one step ACW and a new symbol occurs at the top right corner. To complete this series, figures (2) and (5) have to be interchanged.

20. (1) : One arrow gets reversed in each step. To complete this series, figures (1) and (4) have to be interchanged.

21. (4) : Initially, the cyclist has both his body and head bent down. He then raises his head and subsequently his body. This procedure is repeated. Figures (4) and (5) when interchanged will complete this series.

22. (1) : Dots and lines are added alternately. To establish this series, figures (1) and (2) have to interchanged.

23. (5) : 1, 2, 3, 4 and 5 crosses are replaced sequentially by similar figures. The sequence is established without interchange of positions.

24. (2) : The edges of the hat undergo alternate change. One line is added to the top every time. Eyes get light and dark alternately and nose changes into dot and line alternately. Collar changes alternately. The sequence will be established if figures (2) and (4) are interchanged.

25. (3) : In one step, the signs interchange positions with those present opposite to them and in the next step, the signs move one step CW. These two steps occur alternately and the series would be established if figures (3) and (4) are interchanged.

26. (2) : The lines turn to the other side of the square i.e. those inside, turn outside and those outside, turn inwards and this change takes place in the increasing order of the number of lines. When all the lines have turned to the other side, then all the lines get curled. This series will be established by interchanging figures (2) and (5).

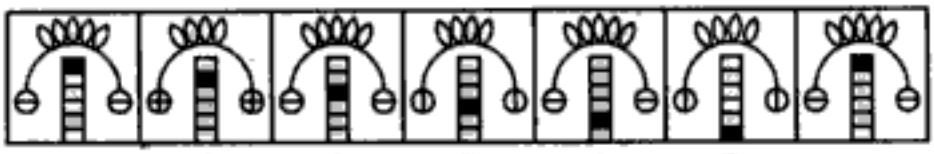
27. (3) : One line is removed from the figure after every two steps. So, figures (3) and (4) have to be interchanged.

28. (2) : The pot rotates 45° CW each time. If the pots in all the figures be assumed to be erect then the lines in the strip reverse their directions in each step and the dot moves from one end to the other appearing above and below the strip alternately. To establish this series, figures (2) and (4) have to be interchanged.

29. (1) : L-shaped lines and curved lines are lost alternately. This series will be established if figures (1) and (3) are interchanged.

30. (4) : The pin exchanges positions with each one of the arrows alternately and in each step both the pin and the arrow (with which it has exchanged place) get inverted. For this series to be completely established, figures (4) and (5) need to be interchanged.

6.



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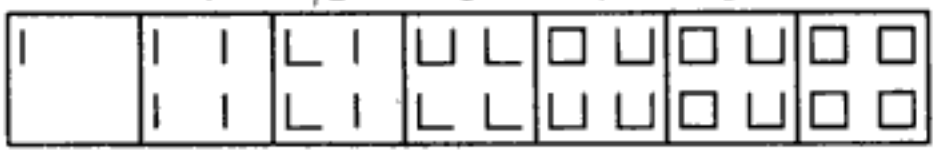

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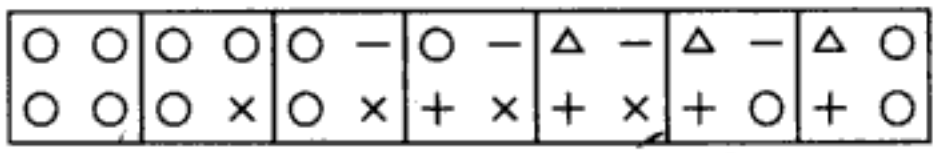

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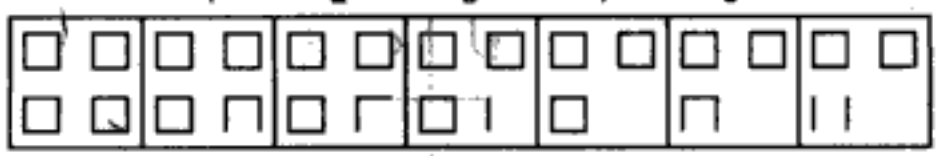

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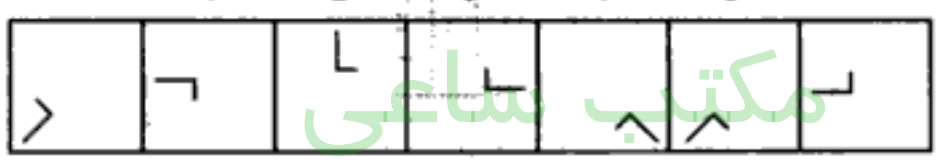

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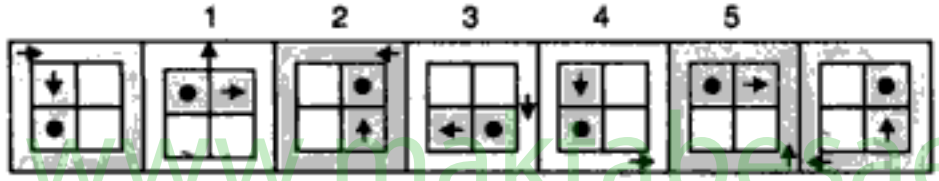

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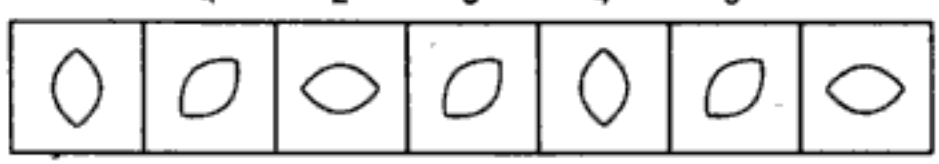

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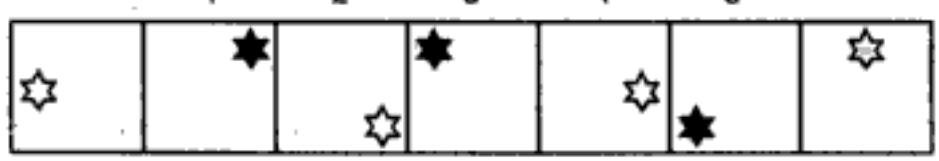

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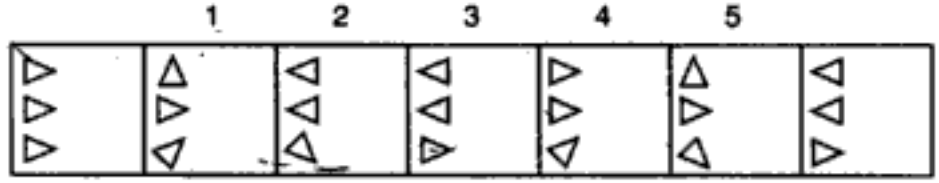

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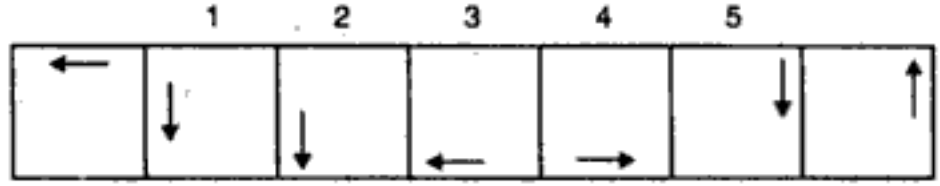

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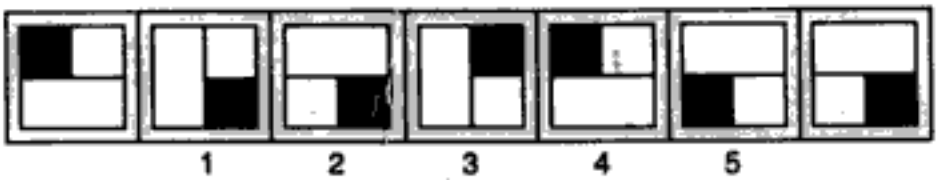

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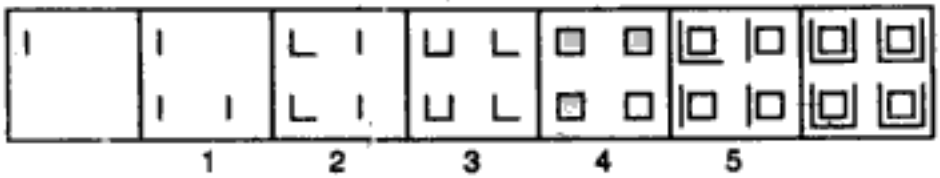

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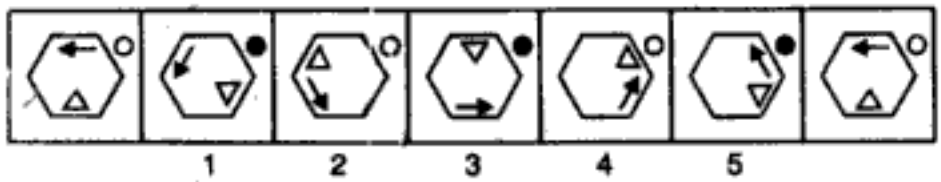

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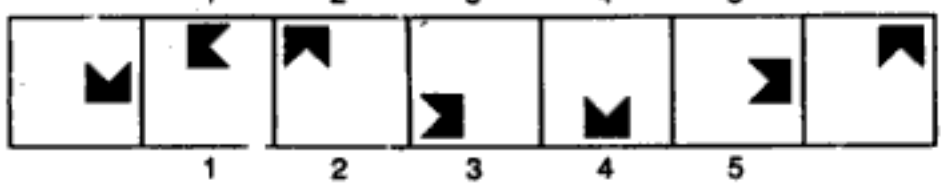

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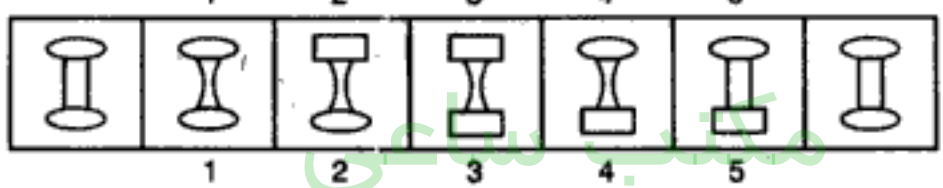

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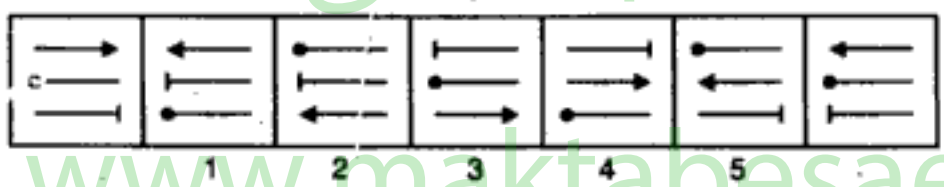

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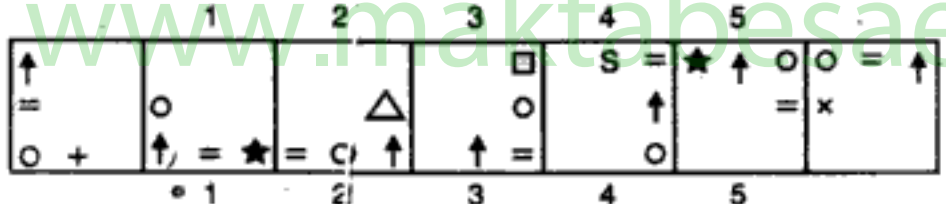

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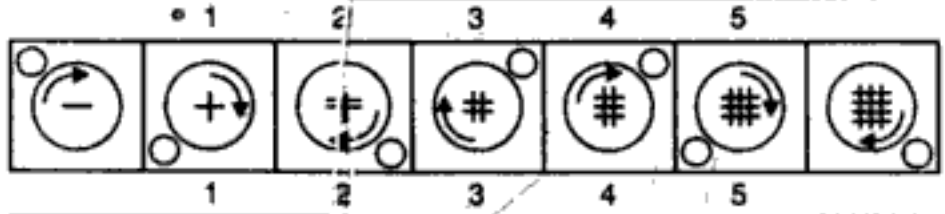

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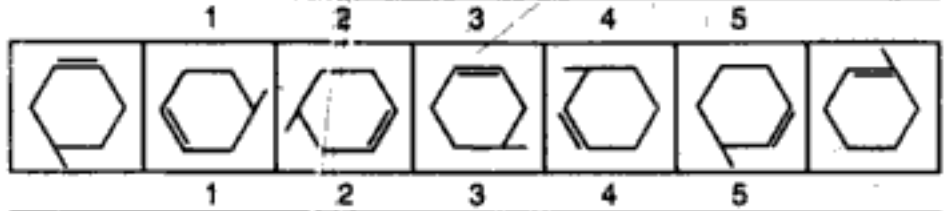

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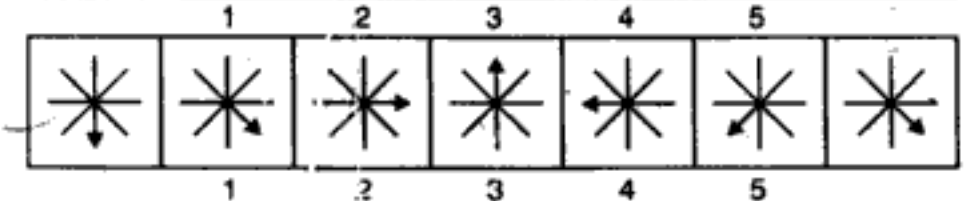

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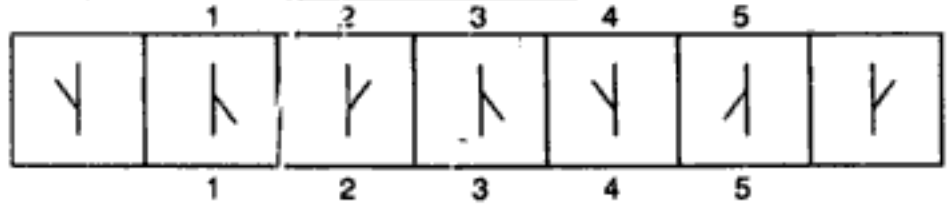


18. (1) : One arrow is added in a corner in a clockwise direction each time and also the direction of all the arrows changes each time. In fig. (1), the direction of arrows should be opposite.

19. (4): The figure rotates 135° ACW in first, second, fourth, fifth. ..... step and 45° CW in third, sixth, ... step. The arrow reverses its direction in every second step.

20. (4) : The lines rotate 90° CW in each step and the number of lines increases by two and decreases by one alternately. In fig. (4), the number of lines should be three.

21. (1) : The arrow moves anticlockwise one and two steps alternately (each step equal to one-third of side of square) and reverses its direction each time. In fig. (1), the direction of the arrow should be reverse.

22. (5) : Sides of the inner figure and the outer figure get curved alternately. But in fig. (5), one side each of the outer and inner figure get curved.

23. (2) : The arrow rotates clockwise through 45° and 90° alternately. The central line in the arrow occurs alternately. The other figure rotates 90° ACW in each step and moves clockwise one step and two steps alternately. In fig (2), the C-shaped figure should have been facing in the opposite direction.

24. (3) : In each step, the figure rotates 45° anticlockwise and half a leaf is added in a clockwise direction. In fig. (3), however, the half part of a new leaf is added in an anticlockwise direction.

25. (1) : In each step, the larger figure is reduced in size and remains at the same position; the smaller figure is lost and a new large figure appears one step ahead of the other figure , in a clockwise direction. In fig. (1), there should be a small 'S' in place of the small circle.

26. (3) : The arc gets inverted in each step and moves along the line from the bottom to the top position, from the top to the middle and from the middle to the bottom position. Thus, in fig. (3), the arc should be inverted.

27. (1) : The black portion moves one step anticlockwise and the line rotates 90° anticlockwise each time. In fig. (1), the dark portion should be present in the lower left side of the square.

28. (4) : Two, three, four, five, six and seven lines are added sequentially to get subsequent figures in each step. Fig. (4) should have one line less.

29. (1) : The arrow moves one step anticlockwise and the triangle moves one step clockwise each time. The circle gets black and white alternately. In fig.(1), the position of the triangle should be two spaces backwards.

30. (5) : The figure moves anticlockwise two steps and one step alternately and also gets rotated 90° CW in each step. In fig. (5), the figure should face in the opposite direction.

31. (5) : In the series, first the lines connecting the two ovals are changed to curved lines and then the two ovals change into rectangles one by one. Further, the original figure is obtained by following the same steps but in reverse order. So, in fig. (5), the connecting lines should still have been curved and the rectangle must have changed into an oval.

32. (1) : The arrow reverses its direction, moves to the bottom position , again reverses direction, moves to the middle position and finally again reverses direction and moves to the top in subsequent steps. The line with the dot moves sequentially from top to the middle, middle to the bottom and bottom to the top position. The line with a bar at its head follows the same pattern as the arrow with the difference that it reverses direction after moving to the new position. So, in fig. (1), the middle figure should face in the opposite direction.

33. (5) : Counting in anticlockwise direction, the third symbol moves one step CW and the first and the second symbols come to the second and the third positions respectively. The fourth symbol is replaced by a new one.
So, in fig, (5), 'S' should be replaced by a new symbol, not the star.

34. (4) : The arrow rotates clockwise; the vertical and horizontal lines are added alternately. The smaller circle moves from corner to corner in an anticlockwise direction. In fig. (4), the smaller circle should be in the top left corner.

35. (1) : The extended side of the hexagon moves anticlockwise two steps and three steps alternately. The other line moves two steps anticlockwise each time and gets inside and outside the hexagon after every second step. So, in fig. (1), the line should be outside the hexagon.

36. (2): The arrow moves anticlockwise, one step and two steps alternately. In fig. (2), it should be one step ahead.

37. (1) : The figure gets inverted in one step and rotates through 180° in the next step. So, fig. (1) should be the same as fig.(5).

38. (3) : In each step, a new arrow is added in the same direction as the one just behind it and the pre-existing arrows reverse their direction. So, in fig. (3), the direction of the new arrow should be opposite.

39. (5) : The player raises one of his legs and an arm in a sequence and then bends down. He then repeats his gesture with the other leg and the other arm. The ball simultaneously rises from the right side and moves on to the left side. In fig. (5) the ball should be on the left side and should descend down from its position in fig.(4).

40. (5) : The left most arrow changes its position with each one of the arrows on the right in a sequence, the other one follows the same sequence. In fig. (5), the second arrow should have been the third one, the third arrow should have been the fourth one and the fourth arrow should have been the second one.

41. (5) : The number of lines is two and three alternately. The lines rotate 90° CW each time and move anticlockwise one step and two steps alternately. So, in fig. (5), the three vertical lines should have been placed in the upper left corner.

42. (2) : The arrow gets laterally inverted in one step and in the next step, it gets inverted w.r.t. the horizontal and a new arrow is added facing in the opposite direction, both w.r.t. the horizontal and the vertical. The process is repeated. So, in fig. (2), the correct position of the lower arrow would be '↳'.

43. (2) : The symbols move in a set pattern. Each time a pre-existing symbol is replaced by a new one first at the upper left corner, then at the upper right corner, then at the lower right corner,then at the lower left corner and so on. Thus, in fig. (2), the symbol at the upper right corner i.e. the triangle should be replaced by a new one.

44. (2) : The arrow head moves clockwise one step and two steps alternately. So, in fig. (2), the arrow should be one step ahead.

45. (5) : The curved line shanding moves one step anticlockwise and the dark shading moves one step clockwise in each turn. So, the dark shading in fig. (5) should have been two step up.

46. (3) : The triangle moves ACW and a line is added on its either sides alternately.

47. (3) : In one step, the symbols at the opposite corners interchange positions. In the next step, the symbols at the adjacent corners along the vertical sides interchange positions. The fifth symbol comes to lie in the upper middle and the lower middle positions alternately and is replaced by a new one in each step. So, in fig. (3), 'C' should be replaced by a new symbol.

48. (3) : Two and one cups are added alternately in a clockwise direction. In fig. (3), there should be one more cup.

49. (5) : The two symbols at the bottom, in the middle and at the top interchange positions in subsequent steps. Each of the other four symbols moves one step anticlockwise. So, in fig. (5), the '×' and '=' signs should interchange positions.

50. (5) : In each step, the symbols move one step anticlockwise along the sides of the square. Also, the symbols outside and inside the square interchange positions and

the one that comes outside the square gets replaced by a new one. So, in fig. (5), the square should be replaced by a triangle.

51. (4) : In each step, the white figure becomes black and moves to the other corner and the black figure is replaced by a new white figure. In fig. (4), the dark figure should be a star.

52. (1) : One of the squares rotates 90° CW in each step and this rotation of squares takes place sequentially in a clockwise direction. In fig. (1), instead of the square in the top left corner, the one in the lower left corner should have been rotated.

53. (4) : The line along which the symbols lie rotates 45° ACW in each step. The last symbol becomes the first, the first one becomes the second, the second one becomes the third and the third one comes to the fourth position and is replaced by a new one. So, in fig. (4), the star should be replaced by a new symbol.

54. (4) : All the symbols move to the adjacent corner in an anticlockwise direction and in every second step, the symbol that reaches the lower right corner gets replaced by a new one. In fig. (4), the symbol 'C' should be replaced by a new symbol i.e. triangle.

55. (3) : The leaf, the pin and the arrow rotate 45° CW one by one. In fig. (3), the leaf should not have turned 45° clockwise.

56. (5) : In order to row the boat, the oarsman bends forward in two steps and then returns to the initial position in two subsequent steps. In the same way he Bends backwards the left side of the figure. However, in fig. (5) the oar has turned towards the right.

57. (5) : In the first step, the symbols move in the order  . The symbols in fig. (2) move in the order obtained by rotating this order 90° ACW to give fig. (3). Similar is the case with figs. (4) and (5). According to this order, fig. (5) is incorrect.

58. (4) : The whole figure gets laterally inverted in each step. The symbol along the right or left boundary of the square interchange positions and the upper symbol gets replaced by a new one. The other two symbols also interchange positions in each step.

59. (4) : In first step, the symbols move in the order  . In the second step, the symbols move in the order  and this goes on in an anticlockwise direction. In fig. (4), the positions of the cross and the arrow should be the same as that in fig. (3).

60. (3) : All the symbols move ACW in each step and the symbols in the upper left and the upper right corners get replaced by new ones alternately. In fig. (3), the star should get replaced by a new symbol i.e. rectangle and the circle should remain unaffected.

2. ANALOGY

'Analogy' implies 'Corresponding'. In the problems based on analogy, a pair of related figures is provided and a similar relationship is to be established between two other figures, by selecting one or both of them from a set of alternatives.

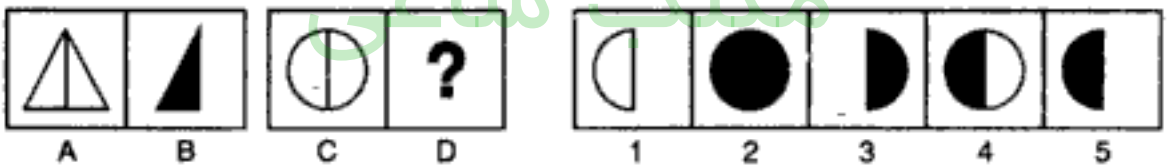
The various types of problems upon Analogy have been discussed with examples and exercises in this chapter.

TYPE 1 : CHOOSING ONE ELEMENT OF A SIMILARLY RELATED PAIR

This type of Analogy involves problems consisting of four figures marked A, B, C and D forming the Problem Set and five other figures marked 1, 2, 3, 4 and 5 forming the Answer Set. The figures A and B of the Problem set are related in a particular manner and a similar relationship is to be established between figures C and D by choosing a figure from the Answer set which would replace the question mark in fig. (D).

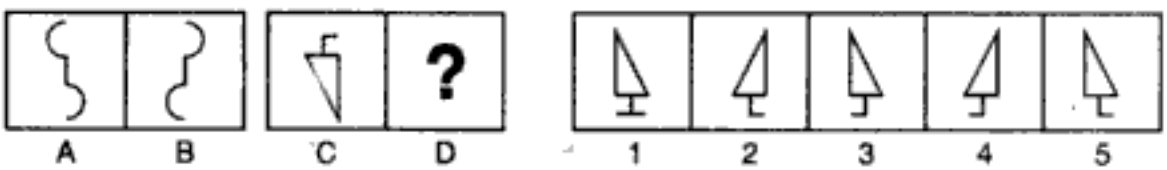
Directions : ***Figures A and B are related in a particular manner. Establish the same relationship between figures C and D by choosing a figure from amongst the five alternatives, which would replace the question mark in fig. (D).***

Example 1 : PROBLEM FIGURES **ANSWER FIGURES**



Solution : Clearly, the right half of the figure is lost and the remaining portion is shaded to get fig. (B) from fig. (A).
Similar relationship will give fig. (5) from fig. (C).
Hence fig. (5) is the answer.

Example 2 : PROBLEM FIGURES **ANSWER FIGURES**



Solution : Fig. (B) is the water image of fig. (A). Similarly, the water image of fig. (C) is fig. (2).
Hence, the answer is (2).

Example 3 : PROBLEM FIGURES **ANSWER FIGURES**

EXERCISE 2A

Directions : ***Each of the following questions consists of two sets of figures. Figures A, B, C and D constitute the Problem Set while figures 1, 2, 3, 4 and 5 constitute the Answer Set. There is a definite relationship between figures A and B. Establish a similar relationship between figures C and D by choosing a suitable figure (D) from the Answer Set.***

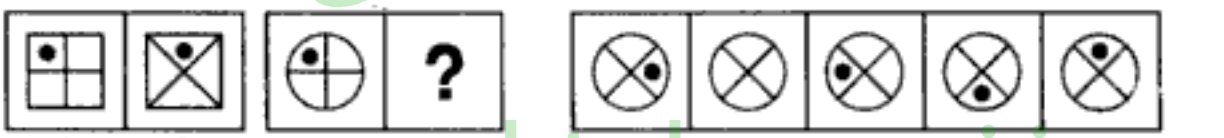
PROBLEM FIGURES **ANSWER FIGURES**

1. 

(B.S.R.B. 1993)

2. 

3. 

4. 

(B.S.R.B. 1990)

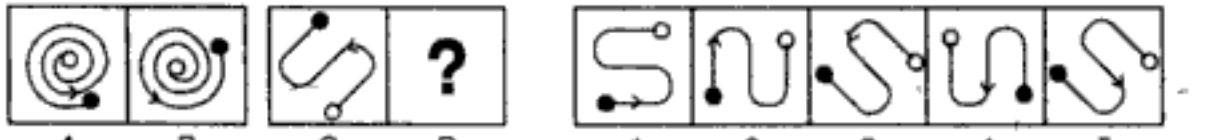
5. 

6. 

(B.S.R.B. 1992)

7. 

8. 

9. 

PROBLEM FIGURES ANSWER FIGURES

10. A B C D ? 1 2 3 4 5
(B.S.R.B. 1993)

11. A B C D ? 1 2 3 4 5

12. A B C D ? 1 2 3 4 5
(Hotel Management, 1992)

13. A B C D ? 1 2 3 4 5
(B.S.R.B. 1995)

14. A B C D ? 1 2 3 4 5
(B.S.R.B. 1993)

15. A B C D ? 1 2 3 4 5

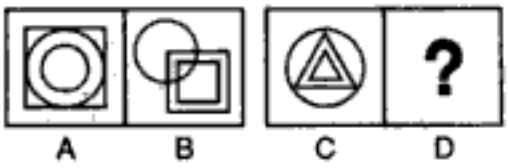
16. A B C D ? 1 2 3 4 5
(B.S.R.B. 1995)

17. A B C D ? 1 2 3 4 5

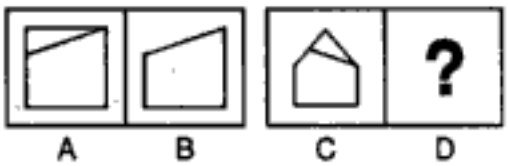
18. A B C D ? 1 2 3 4 5
(B.S.R.B. 1992)

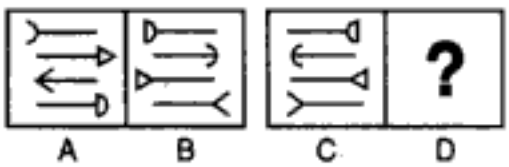
19. A B C D ? 1 2 3 4 5

PROBLEM FIGURES ANSWER FIGURES

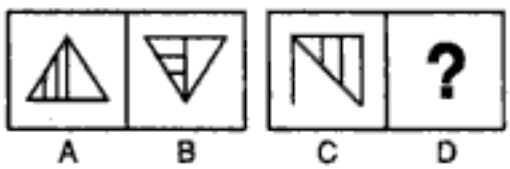
20. 

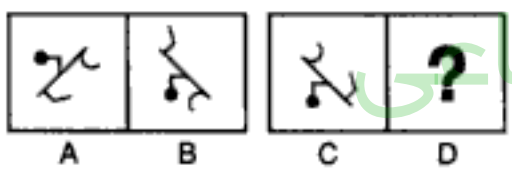
(B.S.R.B. 1995)

21. 

22. 

(B.S.R.B. 1994)

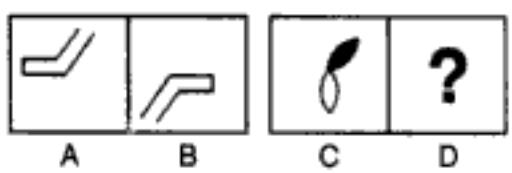
23. 

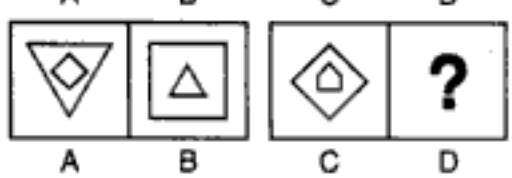
24. 

(Bank P.O. 1995)

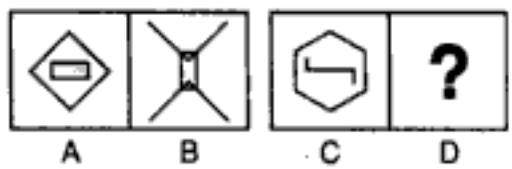
25. 

(Asstt. Grade, 1993)

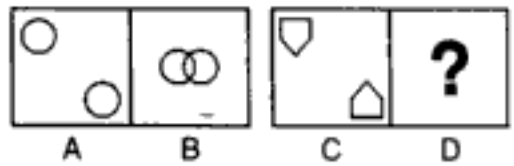
26. 

27. 

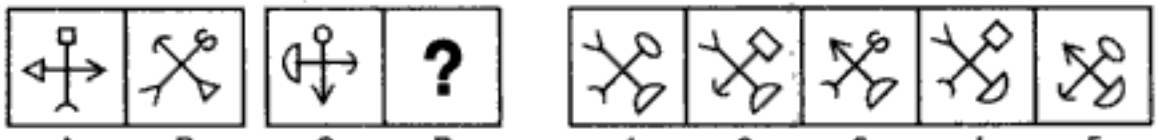
(Bank P.O. 1993)

28. 

(Teachers' Exam, 1991)

29. 

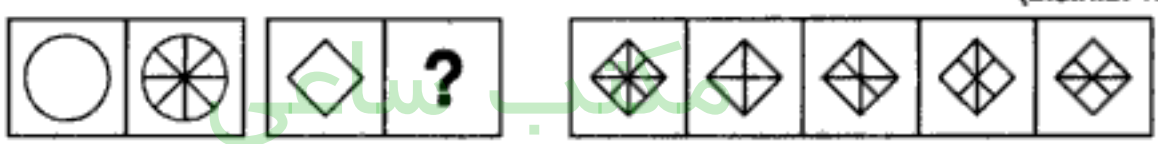
PROBLEM FIGURES ANSWER FIGURES

30. 
A B C D 1 2 3 4 5
(B.S.R.B. 1994)

31. 
A B C D 1 2 3 4 5

32. 
A B C D 1 2 3 4 5

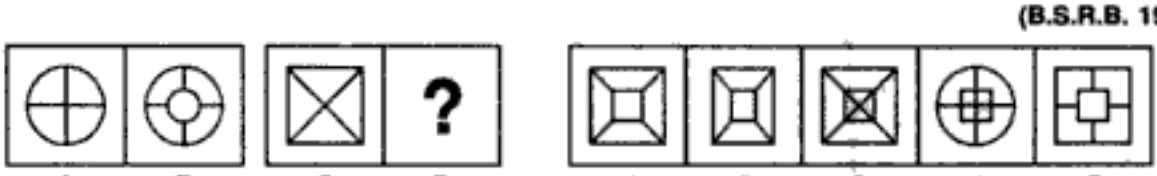
33. 
A B C D 1 2 3 4 5
(B.S.R.B. 1996)

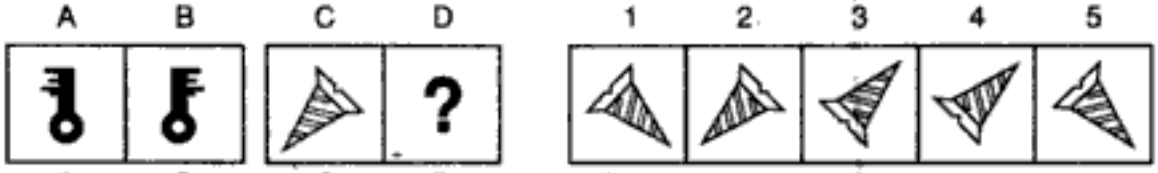
34. 
A B C D 1 2 3 4 5
(Central Excise, 1989)

35. 
A B C D 1 2 3 4 5
(B.S.R.B. 1994)

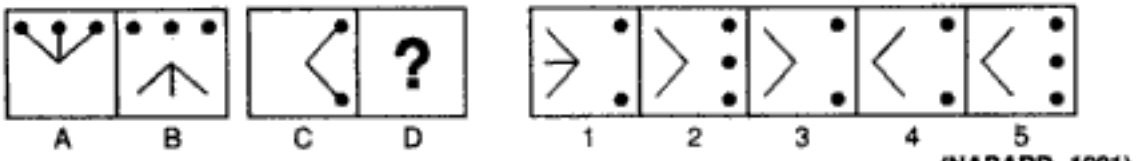
36. 
A B C D 1 2 3 4 5

37. 
A B C D 1 2 3 4 5
(B.S.R.B. 1990)

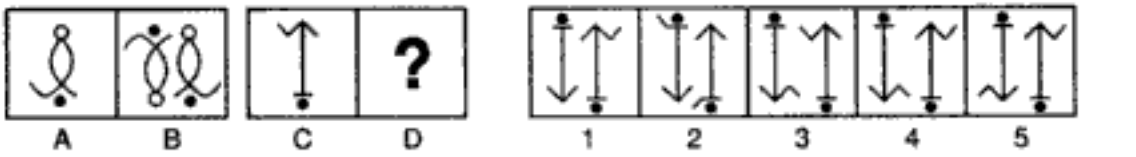
38. 
A B C D 1 2 3 4 5

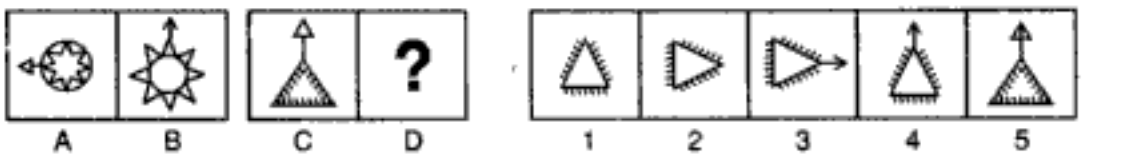
39. 
A B C D 1 2 3 4 5

PROBLEM FIGURES ANSWER FIGURES

40. 

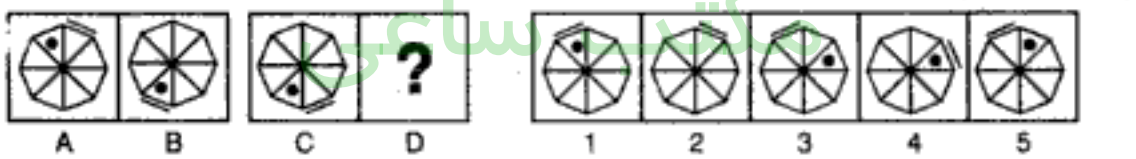
(NABARD, 1991)

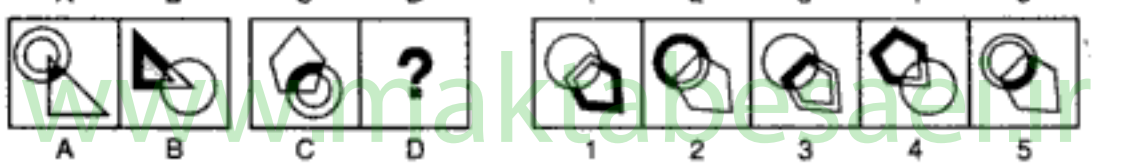
41. 

42. 

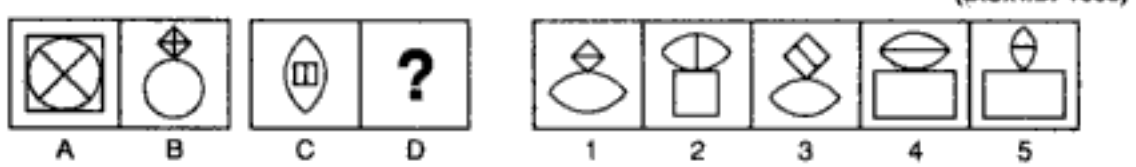
43. 

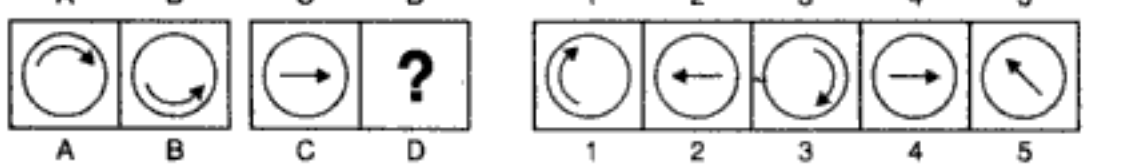
(B.S.R.B. 1994)

44. 

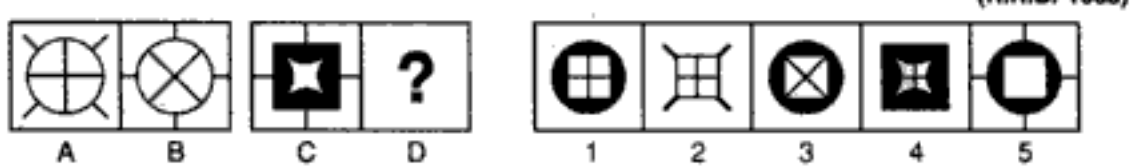
45. 

(B.S.R.B. 1995)

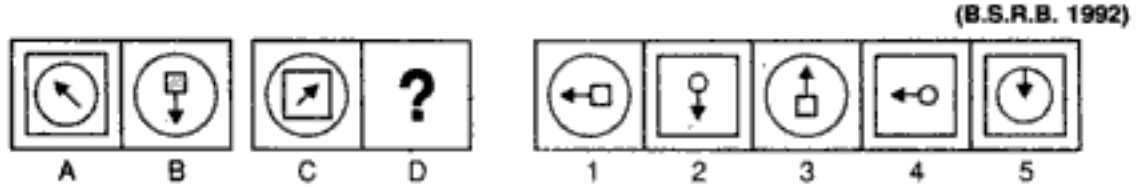
46. 

47. 

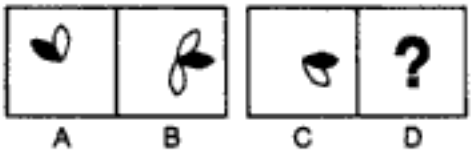
(R.R.B. 1988)

48. 

(B.S.R.B. 1992)

49. 

PROBLEM FIGURES ANSWER FIGURES

50.


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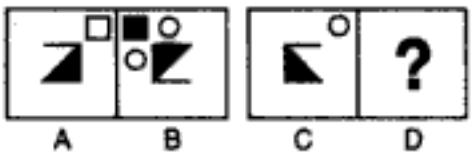
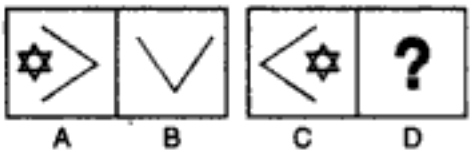


(B.S.R.B. 1993)

52.


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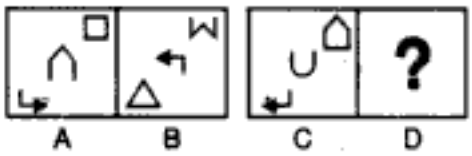

(B.S.R.B. 1994)

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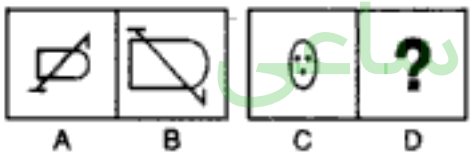

(Teacher's Exam, 1991)

55.


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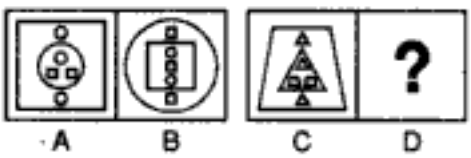

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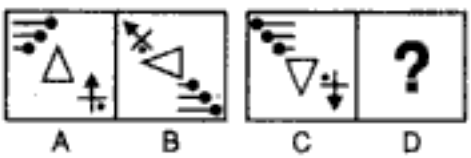

(B.S.R.B. 1994)

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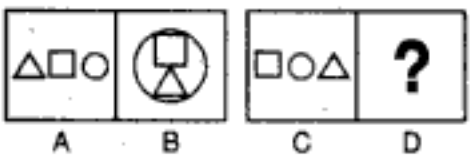

(B.S.R.B. 1993)

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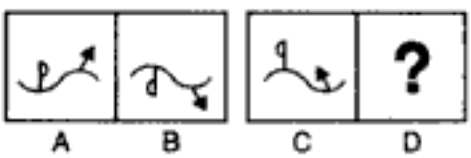

PROBLEM FIGURES ANSWER FIGURES

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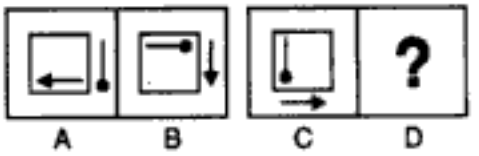

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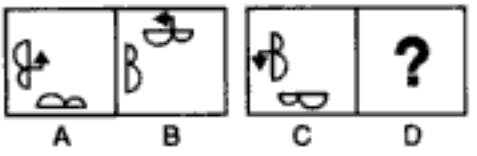
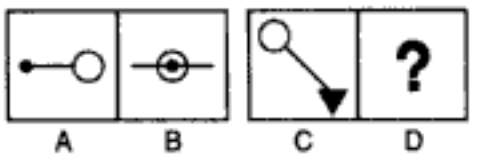


(B.S.R.B. 1995)

62.


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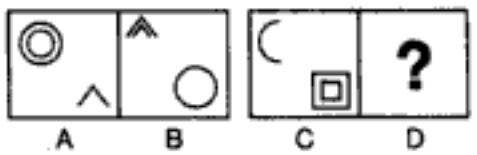
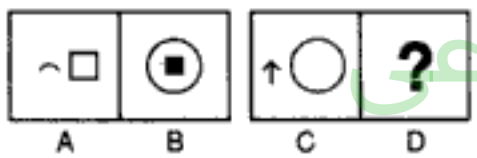
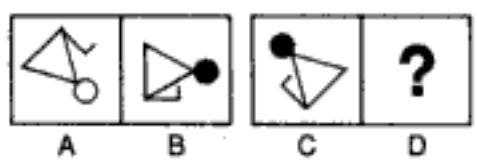


(B.S.R.B. 1993)

64.


65.


(B.S.R.B. 1992)

66.


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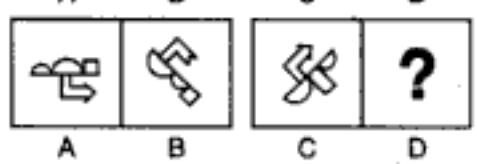
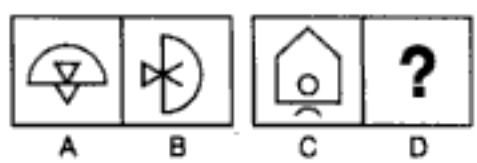


(Bank P.O. 1995)

68.


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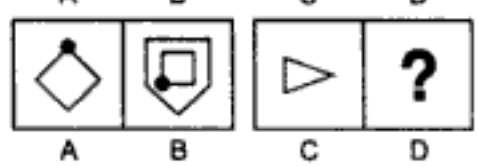
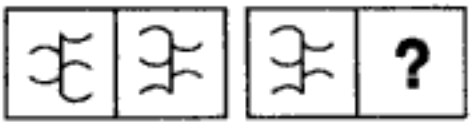


(B.S.R.B. 1996)

PROBLEM FIGURES ANSWER FIGURES

70.


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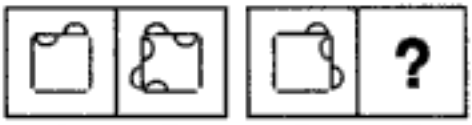
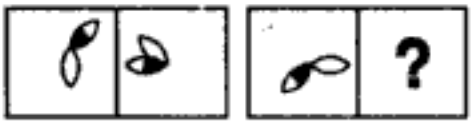


(Asstt. Grade, 1992)

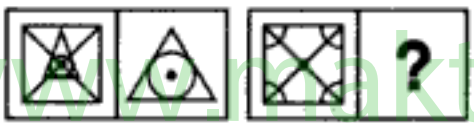
72.


(B.S.R.B. 1995)

73.

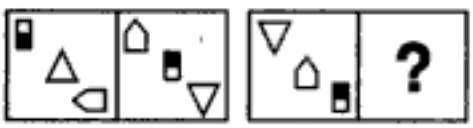

(B.S.R.B. 1993)

74.


75.


76.


(B.S.R.B. 1996)

77.


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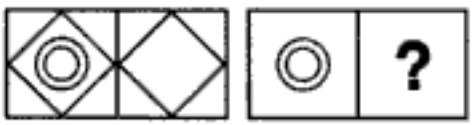
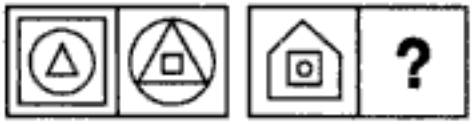


(Hotel Management, 1992)

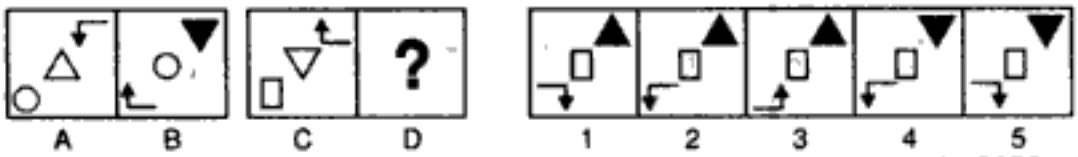
79.


(B.S.R.B. 1992)

PROBLEM FIGURES ANSWER FIGURES

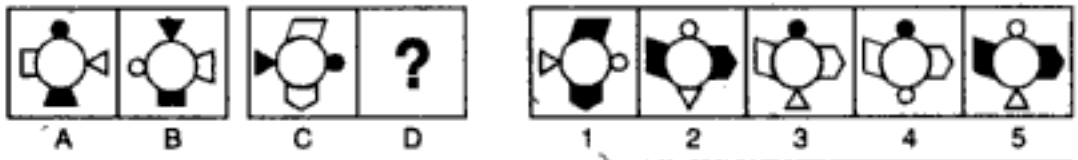
150.

151.



(NABARD, 1991)

152.



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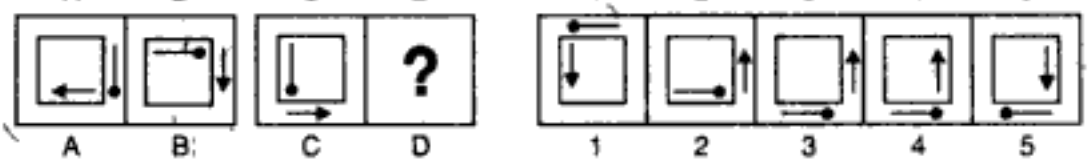
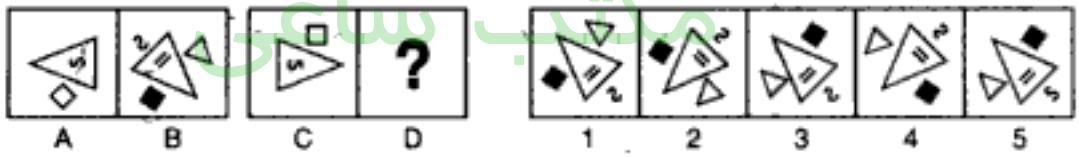


(B.S.R.B. 1992)

154.



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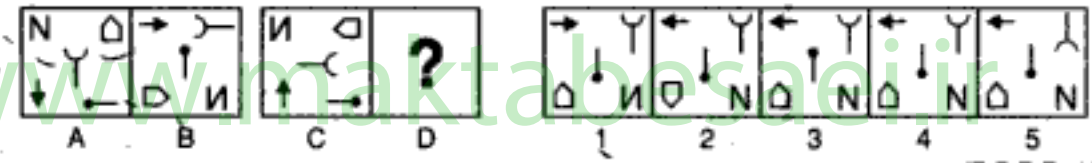
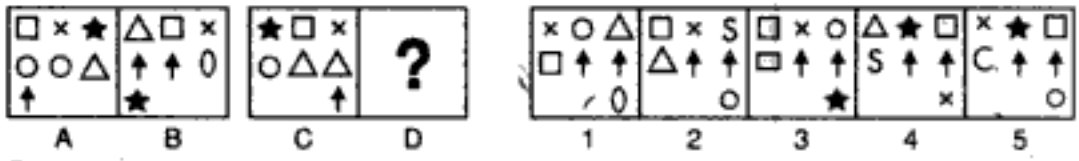
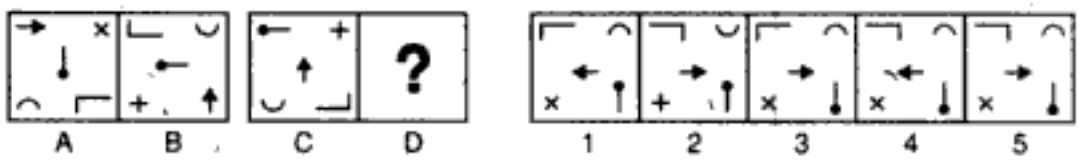


(B.S.R.B. 1994)

156.



157.



(B.S.R.B. 1996)

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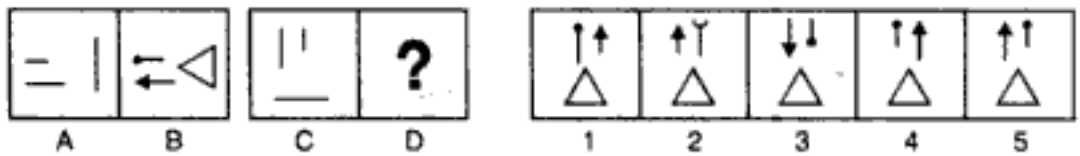
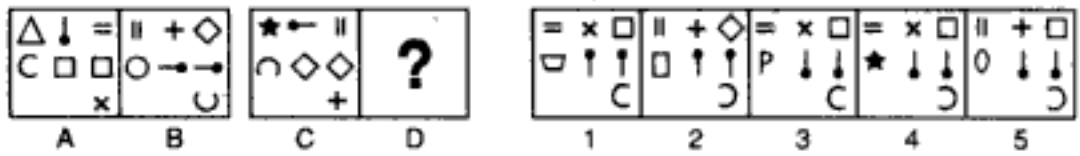


(Bank P.O. 1993)

159.



PROBLEM FIGURES ANSWER FIGURES

170. A B C D ? 1 2 3 4 5
(B.S.R.B. 1992)

171. A B C D ? 1 2 3 4 5

172. A B C D ? 1 2 3 4 5
(B.S.R.B. 1994)

173. A B C D ? 1 2 3 4 5

174. A B C D ? 1 2 3 4 5
(NABARD, 1991)

175. A B C D ? 1 2 3 4 5
(B.S.R.B. 1995)

176. A B C D ? 1 2 3 4 5
(Bank P.O. 1993)

177. A B C D ? 1 2 3 4 5
(B.S.R.B. 1996)

178. A B C D ? 1 2 3 4 5

179. A B C D ? 1 2 3 4 5
(B.S.R.B. 1994)

PROBLEM FIGURES ANSWER FIGURES

198. 

(U.D.C. 1994)

199. 

200. 

(Clerks' Grade, 1995)

201. 

(I. Tax, 1993)

202. 

(Central Excise, 1992)

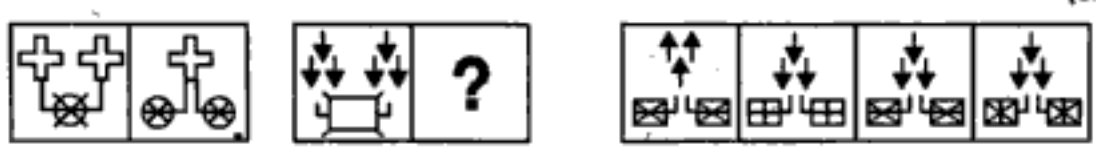
203. 

(S.S.C. 199

204. 

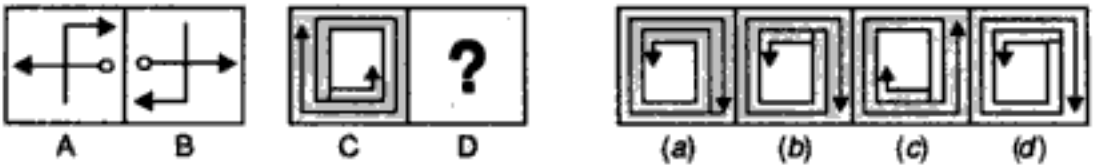
205. 

(S.S.C. 1992)

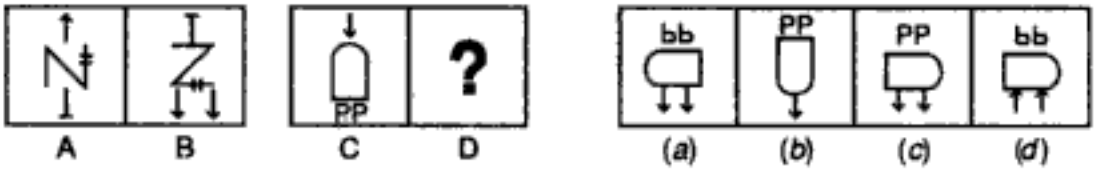
206. 

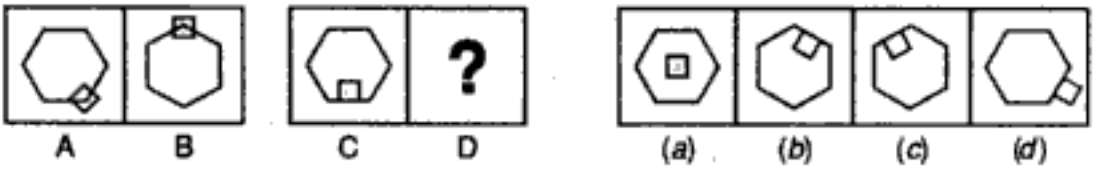
(S.S.C. 1994)

PROBLEM FIGURES ANSWER FIGURES

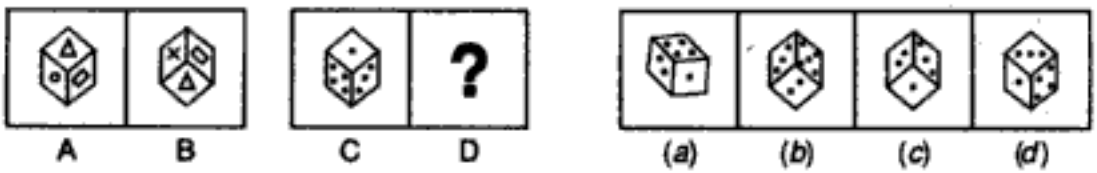
244. 

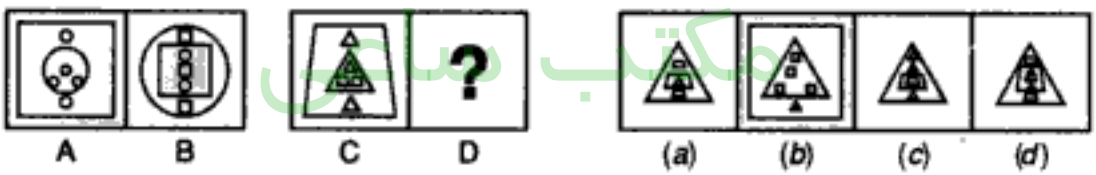
(I. Tax & Central Excise 1996)

245. 

246. 

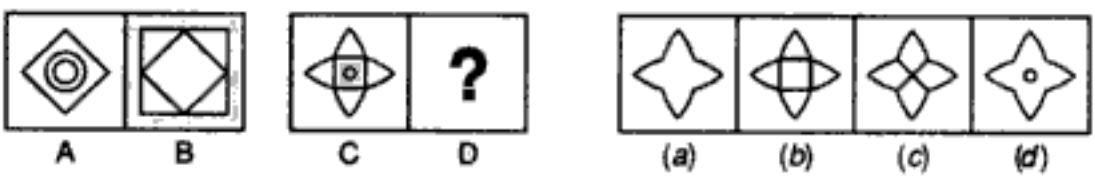
(U.D.C. 1993)

247. 

248. 

(Asstt. Grade, 1993)

249. 

250. 

(Central Excise, 1992)

102. (*1*) : The pentagon gets inverted and the black figure is placed inside it, touching the upper boundary. Also, the lower half of the black figure becomes white.

103. (*3*) : The two central figures are inverted and joined to form a single figure which is placed on the L.H.S. The next two similar figures are laterally inverted and joined to form a single figure which after rotating through 90° is placed in the lower right corner. One of the remaining two identical figures is lost and the other is placed in the right corner.

104. (*3*) : The symbols move in the order  .

The triangle rotates 90° ACW; the pin rotates 90° CW and the other two symbols get laterally inverted.

105. (*4*) : The figure rotates through 135° ACW.

106. (*5*) : Fig. (B) contains both the inverted and the laterally inverted images of fig. (*A*).

107. (*4*) : The fig. rotates 90° CW. If an arrow is attached to the main fig. then, it is converted to a pin and two arrows are introduced on either sides of the pin. On the other hand, if a pin is attached to the main fig. then, it is replaced by an arrow and two pins are introduced on either sides of the arrow.

108. (*4*) : The fig. rotates 90° ACW and the arrow gets detached from it. The arrow gets inverted and the remaining part of the fig. gets laterally inverted.

109. (*3*) : The first, second, third and fourth symbols become fourth, third, second, and first respectively. The third symbol gets inverted and the fourth symbol becomes black.

110. (*4*) : The symbols move in the order  .

The symbols that reach the central upper and central lower position, get inverted.

111. (*5*) : The figure at one of the corners moves to the adjacent side CW and the big and small semi-circles interchange positions. The other fig. rotates 90° ACW and moves to the adjacent side CW, and the bent pin gets inverted.

112. (*5*) : The fig. rotates through 180°. The arrowhead gets inverted. The semicircle enlarges and the square reduces in size.

113. (*1*) : The fig. rotates 90° ACW and then gets inverted. The larger figure reduces in size and the lower figure enlarges.

114. (*1*) : Two of the circles are converted into black triangles.

115. (*3*) : The inner figure is replaced by a figure with one less number of sides. The outer figure rotates 90° ACW and in each of the white rectangles, the outer halves become black.

116. (*3*) : One arrow is shifted to the top over the circle, with reversed direction.

117. (*2*) : The curved parts in the two figures are lost and the remaining parts are made to intersect.

118. (*2*) : The inner figure is rotated 45° CW and then inverted. The outer figure is rotated 45° ACW and then inverted.

119. (*5*) : The figure rotates 45°CW and the dots outside the main figure move to the other sides of the line.

120. (*5*) : The figure rotates 90° CW and gets inverted. The smaller and the larger curved portions interchange positions and the symbol inside the fig. is replaced by a new one.

121. (*5*) : The figure rotates 90° ACW. The black portion becomes white and vice-versa.

122. (*5*) : The figures formed by rotating fig. (A) through 90° CW and through 90° ACW are collected to form fig. (B). In a similar manner fig. (C) gives fig. (*5*).

138. (2) : The figure rotates through 180° and three lines forming a zig- zag, get attached to its lower end.

139. (4) : The symbols move in the order 

The symbol that reaches the central position rotates 90° CW and its arc gets inverted; the 'P' shaped symbol rotates through 180°; the 'C' shaped symbol rotates 90° CW; the 'S' Shaped symbol gets laterally inverted and the fifth symbol gets replaced by a new one.

140. (2) : The figure gets laterally inverted; the white end becomes black; the black end becomes white and the circle becomes black if initially white and becomes white if initially black.

141. (3) : Fig. rotates 90° CW and the dot and the cross interchange positions.

142. (4) : The symbols move in the order 

The symbol at the top right corner gets replaced by a new one.

143. (3) : Each of two incomplete squares towards the upper side gets laterally inverted. The square at the lower left corner loses two of its sides while the one at the lower right corner loses one side.

144. (3) : The upper and the lower symbols interchange positions. The symbol that reaches the top gets laterally inverted; the second symbol gets inverted and the third symbol rotates 90° CW.

145. (5) : The lower figure rotates through 180° and the upper figure rotates through 135° CW and gets inverted.

146. (1) : The figure rotates 135° ACW. The triangle, arrowhead and the arc get inverted.

147. (3) : The main figure gets rotated through 180° and its hooks get inverted. The arrow rotates 135° ACW.

148. (1) : The figure rotates through 180° and a line is added to the lower part of the figure obtained.

149. (2) : The symbols move in the order 

The symbol that reaches the top- left position turns white; the symbol that reaches the lower-left corner rotates through 45°; the symbols at the top and middle positions in the central column rotate through 90° CW; the symbol at the lower position in the central column gets laterally inverted and a new symbol replaces the symbol in the top- right corner.

150. (2) : The symbols move one step downwards and the lowermost symbol reaches the top. The symbol that reaches the top position, gets inverted; the second symbol from the top, rotates through 90°; the third symbol becomes black and the fourth symbol rotates 90° CW.

151. (2) : The symbols move one step upwards and the topmost symbol becomes the lowermost. The symbol that reaches the top, gets inverted and turns black and the symbol that reaches the lowermost position gets inverted.

152. (5) : The fig. rotates 90° ACW and the white symbols turn black while the black symbols turn white.

153. (4) : The pin and the arrow move to the adjacent side in an ACW direction. Out of these two, the one which was inside, comes out and the other which was outside gets in.

154. (3) : The fig. rotates 135° ACW. The 'S'-shaped symbol gets laterally inverted and comes out near the base of the triangle. The square moves to the other side of the triangle and gets black. A new symbol '=' appears inside the triangle and a small triangle appears outside the larger triangle.

155. (*4*) : The symbol move in the order  .

The clamp and arrow rotate 90° ACW; the pentagon and pin rotate 90° CW and the 'N' shaped symbol gets inverted.

156. (*3*) : The symbols in fig. (A) move in the order  and a new symbol appears in central right position to give fig. (B). The lateral inversion of this order i.e. the order  with the appearance of a new symbol at the central left position gives the answer fig. from fig. (C).

157. (*5*) : The symbols move in the order  .

The symbol that reaches the top- left position, gets inverted; the symbol in the lower left corner rotates through 45°; the symbol in the upper-right corner gets inverted; the symbol in the lower-right corner rotates 90° ACW and the central symbol rotates 90° CW.

158. (*5*) : Out of the two parallel lines, the larger line gets converted to an arrow and the smaller line gets converted to a pin. The third line is replaced by a triangle.

159. (*3*) : The symbols move in the order  .

The symbol that reaches the top- left corner, rotates through 90°; the symbol that reaches the central and the right positions in the middle row, rotates 90 ° ACW; the symbols that reach the central & right positions in upper row rotate through 45°, the symbol that reaches the lower right corner rotates 90° ACW and a new symbol appears in middle-left position.

160. (*5*) : The upper and the lower parts of the figure get separated. Shading is removed from the upper part and the lower part is inverted. The two parts are then placed side by side.

161. (*1*) : The symbols move in the order  .

The symbol that reaches the top- left corner rotates 90° ACW; the symbol in the top-right corner rotates through 45°; the symbols in the lower-left corner and in the central positions rotate 90° CW and the symbol that reaches the lower-right corner rotates through 90°.

162. (*5*) : The figure gets laterally inverted. The dot on the larger arc, the pin and the small arc rotate 90° ACW. Also, the pin gets inverted.

163. (*3*) : The figure rotates 90° CW. One half of one of the lines on the arrow is lost. The figure in front of the arrowhead rotates through 45°.

164. (*4*) : The missing line segment in (A) is replaced in (B). Then moving ACW, the third line segment is removed along the two next consecutive sides of the square. Shaded portion in (A) moves three steps ACW. Similarly, fig. (C) gives fig. (*4*)

165. (*4*) : Each part of the figure rotates 90° CW and also moves two steps CW.

166. (*3*) : The lower & L.H.S. portions rotate 135° ACW; the R.H.S. & the upper portions rotate through 180°.

167. (*5*) : All the arrows get laterally inverted and the uppermost and the lowermost arrows interchange positions.

168. (*2*) : The symbols move in the order  .

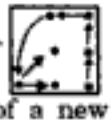
The triangle & pin rotate 90° CW; the square and the '+' symbols rotate through 45° and the trapezium gets inverted.

169. (2) : The innermost symbol rotates 135° ACW, the arc at its one end gets replaced by a black triangle and the black circle is replaced by a white circle and this symbol gets enlarged. The middle symbol gets diminished and inverted and appears on the lower side. The outermost symbol gets diminished and inverted and appears on the upper side.

170. (3) : The figure gets laterally inverted and the inverted image of the figure formed, gets attached to it.

171. (2) : The symbols move in the order 

The symbols that reach the upper position in the leftmost column, middle and lower positions in the middle column, middle position in the rightmost column rotate 90° CW. The symbol that reaches the lower position in the leftmost column rotates through 45° and a new symbol appears in the middle position in the leftmost column. The symbol in the lower position in the right most column rotates 90° ACW.

172. (5) : The symbols move in the order  and a new symbol appears in upper-right corner, to give fig. (B) from fig. (A). The movement of symbols in the order  (obtained by rotating the initial order 90° CW) and the appearance of a new symbol in the lower right corner, gives the answer figure i.e. fig. (5) from fig. (C).

173. (2) : The symbols move in the order 

The 'Z'-shaped symbol gets inverted; the clamp and the arrow rotate 90° ACW; the pin and the pentagon rotate 90° CW.

174. (4) : The contents of the hexagon rotate one step CW and the diagonally opposite symbols interchange positions.

175. (4) : The figure rotates 45° CW and then turns about the arrow. The arrow also gets reversed.

176. (2) : The fig. gets laterally inverted and the arrowhead or the arc reverses in direction.

177. (2) : The main figure gets inverted. The end of the lamp which is white turns black and the other end turns white. The circle turns black, if initially white and it turns white, if initially black. The arrow at the bottom rotates 90° CW and the square rotates through 45°.

178. (1) : The symbol move in the order 

The 'C' and 'S' shaped symbols get laterally inverted. The triangle rotates 90° ACW; the hook rotates 90° CW and the fifth symbol rotates 45° ACW.

179. (5) : The symbols move in the order 

The symbol that reaches the lower- right corner gets rotated 90° ACW; the symbols that reach the upper-left and upper-right positions, get inverted; the central symbol rotates 90° CW and the symbol that reaches the lower- left corner rotates through 45°.

180. (*1*) : The symbols move in the order 
The triangle rotates 90° CW; the square and the arrow rotate 90° ACW and the fourth symbol gets inverted.

181. (*2*) : The symbol moves to the diagonally opposite quadrant. Out of the two similar figures, the inner one is removed and the outer figure is made dotted.

182. (*5*) : The lines carrying the circle and the bar rotate through 180° white those carrying the squre and the arrow rotate 135° ACW.

183. (*3*) : The figure gets laterally inverted and all the arcs reverse their directions.

184. (*5*) : Each one of the squares rotates 90° ACW.

185. (*2*) : The figure rotates 45° CW and gets inverted. The arrowhead, then, gets inverted.

186. (*1*) : The lower-right symbol enlarges and comes to the centre and the upper left symbol enters it. The other two symbols interchange positions. The symbol that reaches the top-right position rotates 90° ACW while the symbol that reaches the lower-left position rotates 90° CW.

187. (*2*) : In the two figures, the portions in which no lines are drawn are removed and the resulting figure is rotated through 180°. In the L.H.S. part of this figure, the single vertical line is replaced by two parallel lines.

188. (*d*) : The figure is replaced by a figure with one less number of sides and this figure is placed inside a circle.

189. (*d*) : Each triangle in the figure is replaced by a rhombus.

190. (*a*) : The figure is duplicated.

191. (*a*) : The inner two figures interchange positions and the outer figure is removed.

192. (*c*) : The two circles along the diagonal from upper left to lower right corner are removed and a circle is placed at the centre. If the two circles are white then the new circle will be black and vice- versa.

193. (d) : A triangle is placed inside the figure with the base of the figure as its base.

194. (d) : The figure is laterally inverted and the black circle is made white.

195. (d) : One fourth part of each element in the figure is lost.

196. (*b*) : The figure is laterally inverted.

197. (*a*) : The figure is rotated 45° ACW.

198. (*c*) : The figure is laterally inverted.

199. (*a*) : Two adjacent sides of the figure are removed and the other two sides are brought to the centre.

200. (*c*) : The figure is inverted or laterally inverted so that the direction of the arrow is reversed.

201. (*c*) : The two equal halves of the figure are and laterally inverted and brought together to form a closed figure.

202. (*b*) : The circles are converted to equilateral triangles and the ellipses are converted to scalene triangles and vice-versa. (This is a question on inverse relationship).

203. (*c*) : One horizontal and vertical lines are removed from the figure.

204. (*d*) : The figure is inverted and dots are placed at each one of its vertices.

205. (*c*) : The figure is replaced by a figure with two sides more and the new figure is shaded.

206. (*c*) : One of the two similar elements one the top is removed. The lines emerging from the lower element are turned inwards and a similar element appears. Both these elements are then connected to the upper element.

207. (*b*) : A triangle is placed inside, if the initial figure is a quadrilateral and a quadrilateral is placed inside, if the initial figure is a triangle. (This is a question of inverse relationship).

208. (*d*) : The end point of each one of the lines is joined to the end point of the adjacent lines, so as to form a closed geometrical figure.

209. (*d*) : The figure rotates 45° CW and is placed inside a triangle touching its base.

210. (*c*) : The inner figure is replaced by a figure with one more number of sides and this inner figure is shaded.

211. (*d*) : The curved lines are converted to straight lines.

212. (*b*) : The figure is rotated through 90°. The small line perpendicular to the longer line is removed if it exists and is placed if it does not exist.

213. (*d*) : Each one of the figures is replaced by a figure with one more number of sides. The vertical line is replaced by two horizontal lines and the region between these two lines is shaded.

214. (*c*) : The figure is laterally inverted.

215. (*b*) : Only the shaded portion of the figure remains and it rotates 90° CW.

216. (*b*) : The figure gets laterally inverted.

217. (*b*) : The figure is divided into two equal parts and the lower part is placed above the other part.

218. (*d*) : The fig. is inverted and its upper and lower ends are encircled.

219. (*c*) : The circles are converted to ellipses.

220. (*b*) : The contents of the outer square are rotated 45° ACW.

221. (*c*) : The upper and the lower elements in the centre are inverted and joined to form a single element which is placed on the top. The two arcs on the sides, are laterally inverted and joined to form an ellipse which is rotated through 90° and placed below the initially formed figure. One of the two remaining similar elements is removed and the other is placed at the bottom.

222. (*a*) : The figure is rotated through 180°.

223. (*a*) : The number of sides in the figure is increased by one and the number of lines inside the figure is reduced by one.

224. (*c*) : The inner and the outer figures interchange positions by enlargement of the inner figure and the decrease in size of the outer figure. Also the figure that gets in, is shaded by dots.

225. (*c*) : The figure is intersected by a similar small figure.

226. (*d*) : Either the top or the R.H.S. pin is removed and the remaining figure is rotated 90° CW and half of the heads of both the pins are made black.

227. (*a*) : The outer figure is replaced by a figure with one less number of sides and the circle inside the ellipse moves to the opposite end.

228. (*b*) : The whole figure is rotated 90° CW. The outer figure is horizontally divided into two equal parts which are then individually inverted.

229. (*c*) : The number of crosses remains the same and the number of circles increases by one.

230. (*a*) : The figure is divided into two equal parts about a horizontal line and the two parts are inverted and joined to form the new figure.

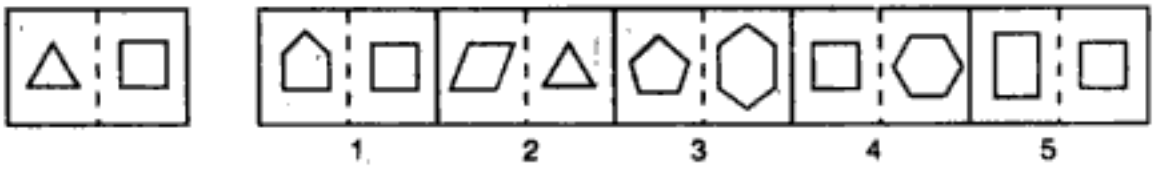
231. (*a*) : The element attached to the main figure, gets attached to the other end of the same side of the main figure.

232. (*b*) : One of the similar figures at the lower end of the main figure gets attached to the upper end and the other element rotates through 90°.

233. (*c*) : The outer figure is replaced by a figure with one side more than the inner figure. And the inner figure is replaced by a figure similar to the outer figure.

234. (d) : The inner figure is rotated 90° CW and is made to intersect the outer figure and a similar figure is made to intersect at the opposite end of the outer figure.

235. (d) : One of the lines near each side of the figure, is brought inside and all these lines are joined to form a closed figure.

15. 
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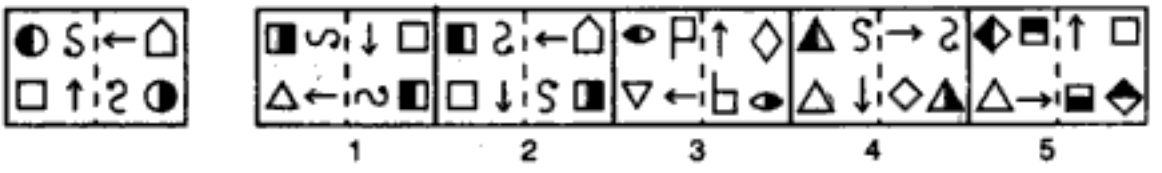
(Bank P.O. 1994)

16. 
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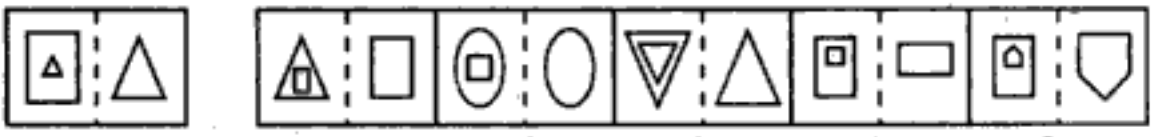
17. 
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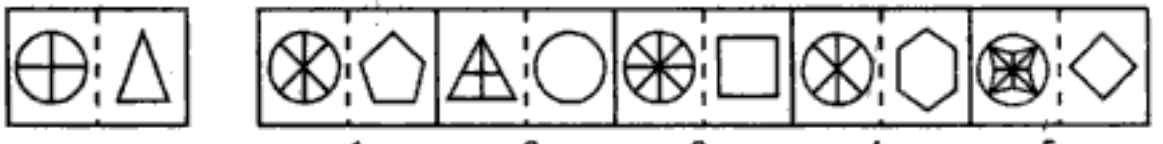
18. 
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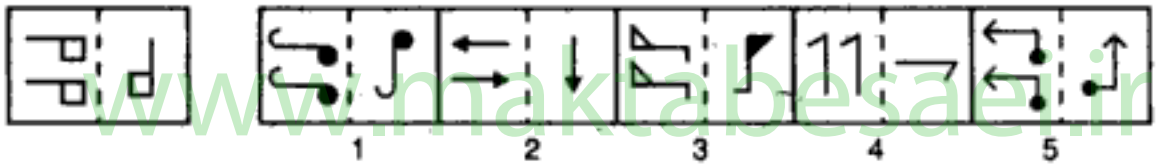
(Bank P.O. 1992)

20. 
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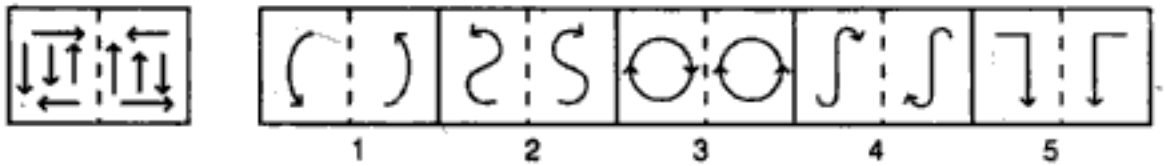
21. 
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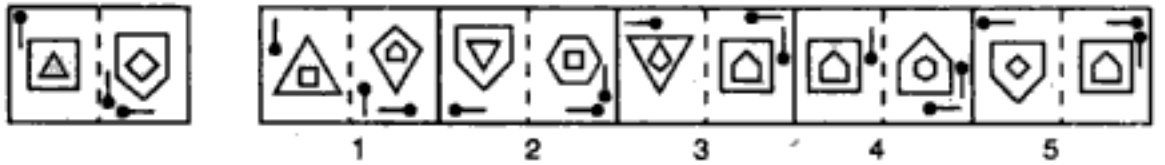
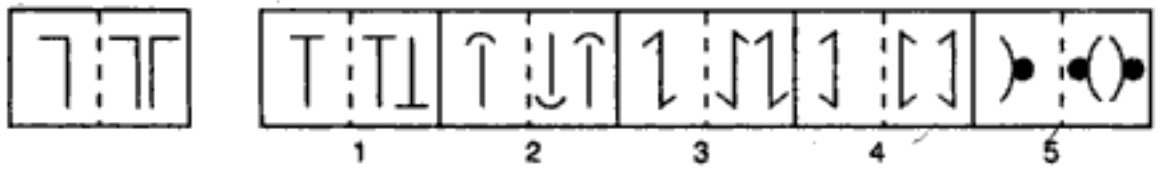
22. 
1 2 3 4 5

(Bank P.O. 1994)

23. 
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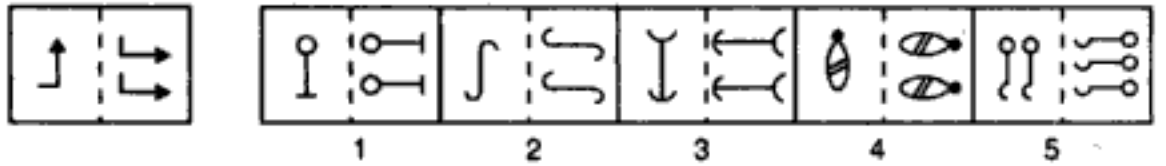
(S.B.I.P.O. 1992)

24. 
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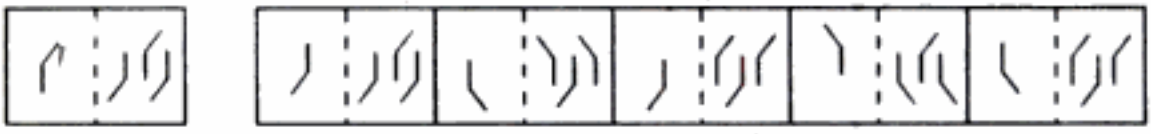
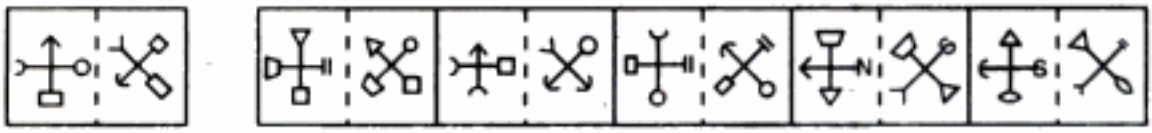


1 2 3 4 5

46.



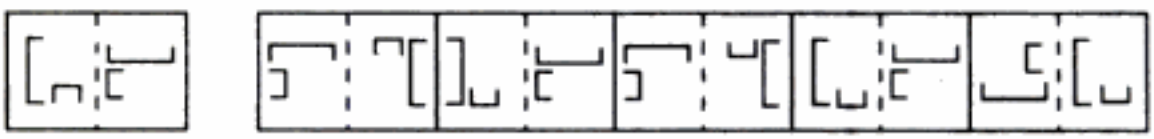
1 2 3 4 5

47.

1 2 3 4 5

(B.S.R.B. 1994)

48.



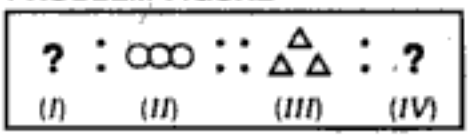
1 2 3 4 5

(S.B.I.P.O. 1991)

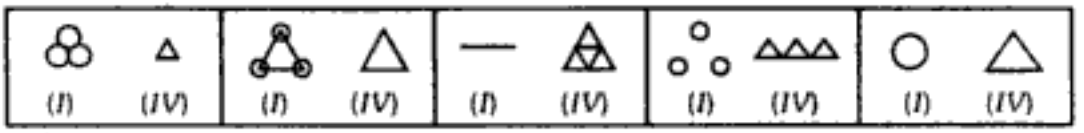
ANSWERS (EXERCISE 2B)

1. (5) : R.H.S. fig. has the same number of sides as the number of arrows in L.H.S. figure.
2. (3) : The L.H.S. figure is enlarged and a similar inverted figure is placed inside it, so as to form the R.H.S. figure.
3. (2) : The L.H.S. figure is inverted upside down to form the R.H.S. figure.
4. (5) : The L.H.S. figure is rotated 135° ACW to form the R.H.S. figure.
5. (1) : All the elements in the L.H.S. figures are different. The innermost element becomes the middle element; the middle element is inverted and made the outermost element and the outermost element is made the innermost element. This gives the R.H.S. figure.
6. (4) : The L.H.S. figure is inverted and enlarged to form the R.H.S. figure.
7. (4) : The L.H.S. figure is rotated 90° CW and a duplicate copy of it is placed in the same direction just below it to form the R.H.S. figure.
8. (3) : The L.H.S. figure rotates 90° CW. The symbol that reaches the lower left position gets inverted and the symbol that reaches the upper-left position gets replaced by a new one. This gives the R.H.S. figure.
9. (1) : The number of sides in the L.H.S. figure increases by two and the number of lines inside and outside increases by one. This forms the R.H.S. figure.
10. (5) : The L.H.S. figure is inverted and duplicated to form the R.H.S. figure.
11. (3) : The upward inverted image of L.H.S. fig. is attached to it to form the R.H.S. figure.
12. (4) : The L.H.S. figure is rotated through 180° and the element at its end is made white so as to obtain the R.H.S. figure.
13. (4) : The outer element is rotated through 90° and decreased in size while the inner element is enlarged to form the outer figure. This gives R.H.S. figure from the L.H.S. figure.
14. (3) : The L.H.S. figure is inverted and duplicated to form the R.H.S. figure.
15. (3) : The R.H.S. figure contains one side more than the L.H.S. figure.
16. (1) : All the elements in the L.H.S. figure move two steps CW. The upper left element in the L.H.S. figure gets laterally inverted; the upper-right element gets inverted, the lower-right element rotates 90° ACW and the fourth element gets replaced by a new one. This forms the R.H.S. figure.
17. (1) : The outer element of L.H.S. figure is removed and the inner element is enlarged to form R.H.S. figure.
18. (1) : The number of sides in the R.H.S. figure is one less than the number of radii in the circle in the L.H.S. figure.
19. (1) : The L.H.S. figure is rotated through 180° to form the R.H.S. figure.
20. (5) : One of the two similar elements in the L.H.S. figure is removed and the other element is rotated 90° CW to form the R.H.S. figure.
21. (4) : All the arrows in the L.H.S. figure reverse their directions to form the R.H.S. figure.
22. (2) : Both the elements of L.H.S. figure are replaced by elements with one more number of sides. The pin gets inverted and moves to the next corner ACW. Another pin with head pointing towards the first pin also appears.
23. (3) : The L.H.S. figure and its laterally inverted image are put together to form the R.H.S. figure.
24. (2) : The L.H.S. figure is rotated 90° CW and duplicated to form the R.H.S. figure.
25. (2) : The L.H.S. figure is inverted and enlarged and a figure similar to the L.H.S. figure is enclosed in it. This forms the R.H.S. figure.
26. (5) : The upper element in the L.H.S. figure is rotated 90° CW and the lower element is rotated 90° ACW to form the R.H.S. figure.

3. **PROBLEM FIGURE**



ANSWER FIGURES



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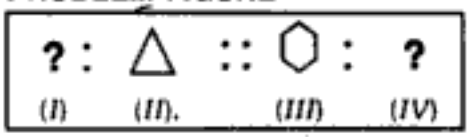
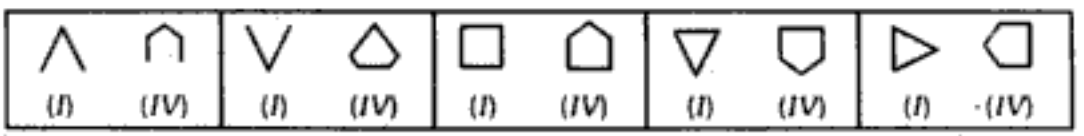


ANSWER FIGURES



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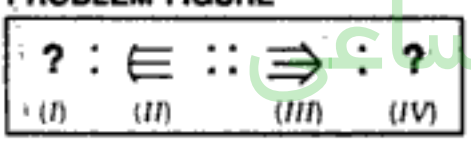

ANSWER FIGURES

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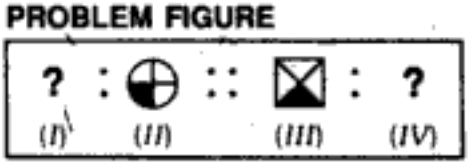
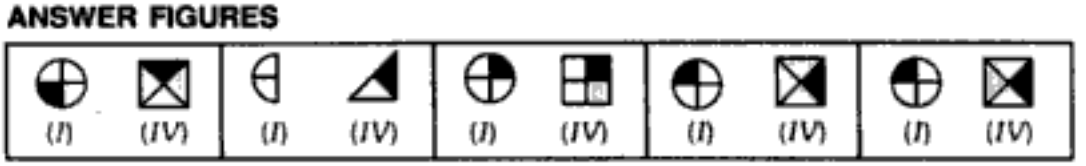


ANSWER FIGURES



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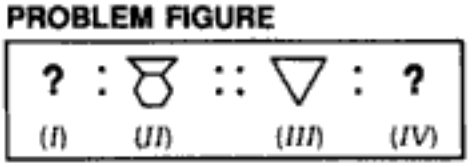
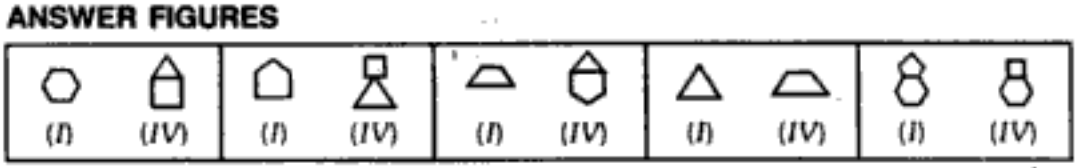


ANSWER FIGURES



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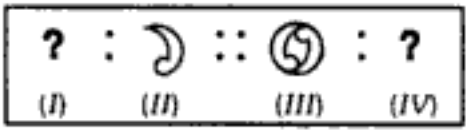
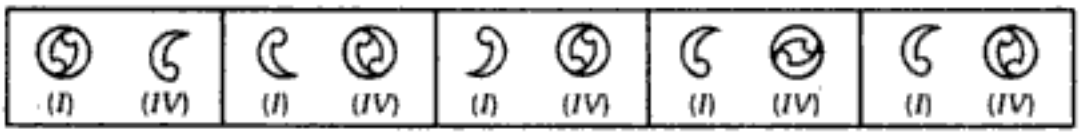


ANSWER FIGURES



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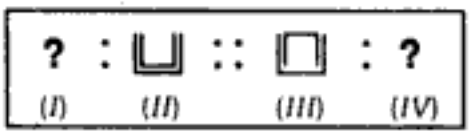
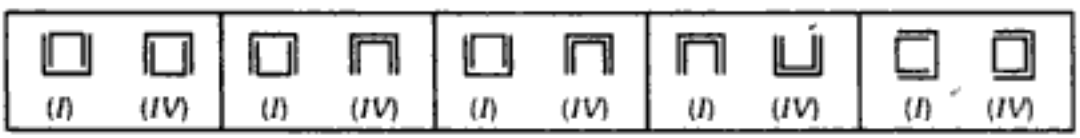


ANSWER FIGURES

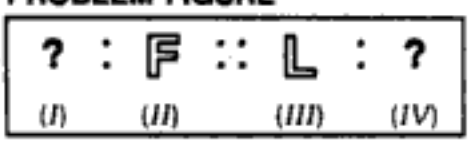


(Bank P.O., 1988)

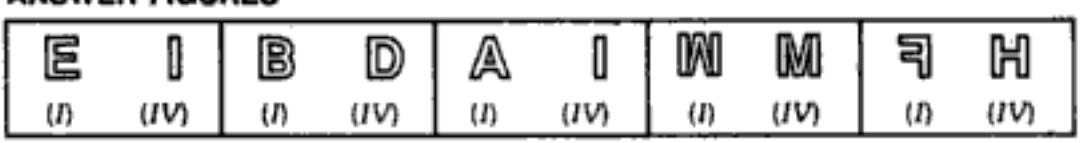
10. **PROBLEM FIGURE**

ANSWER FIGURES

11. **PROBLEM FIGURE**



ANSWER FIGURES



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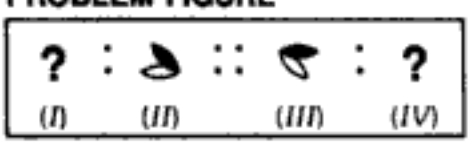
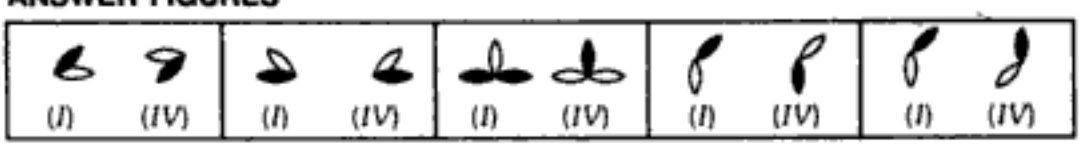
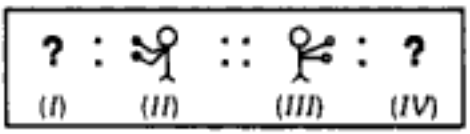


ANSWER FIGURES

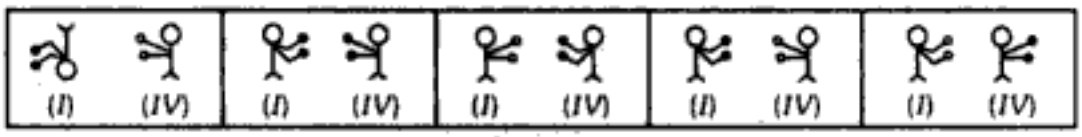


(R.B.I. 1991)

PROBLEM FIGURE

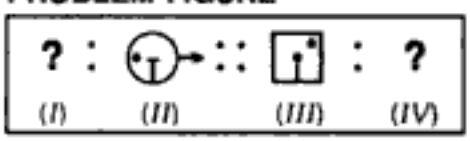
13. 

ANSWER FIGURES

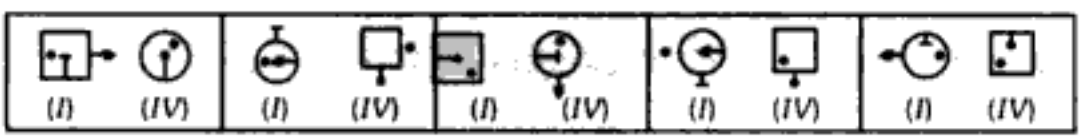


A B C D E

PROBLEM FIGURE

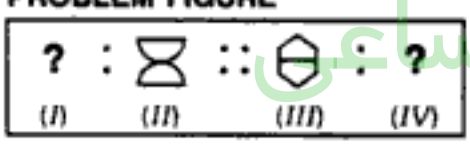
14. 

ANSWER FIGURES

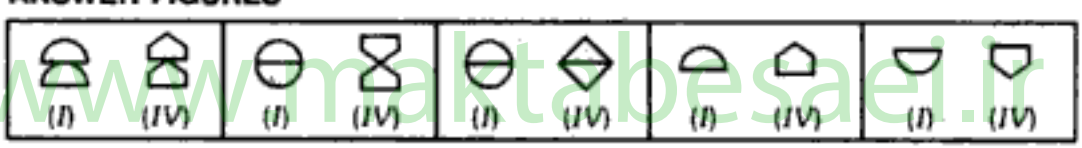


A B C D E

PROBLEM FIGURE

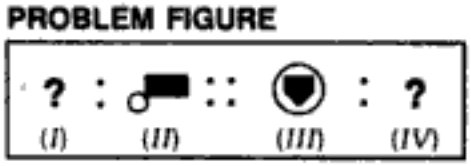
15. 

ANSWER FIGURES

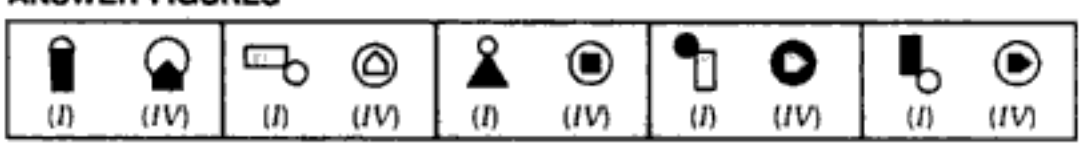


A B C D E

PROBLEM FIGURE

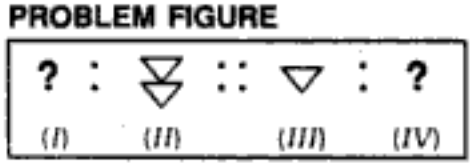
16. 

ANSWER FIGURES

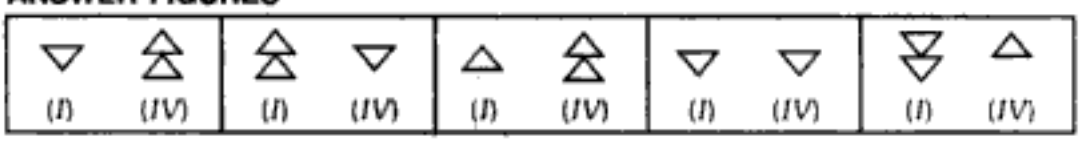


A B C D E

PROBLEM FIGURE

17. 

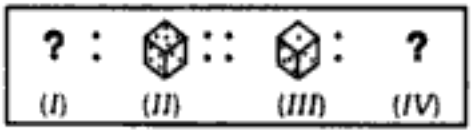
ANSWER FIGURES



A B C D E

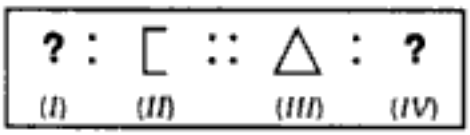
(Bank P.O. 1988)

18. **PROBLEM FIGURE**

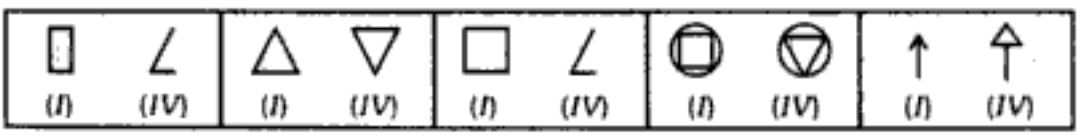


ANSWER FIGURES

19. **PROBLEM FIGURE**



ANSWER FIGURES



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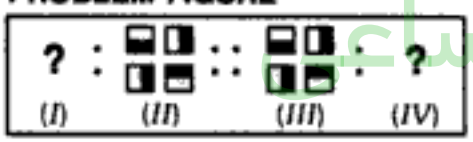
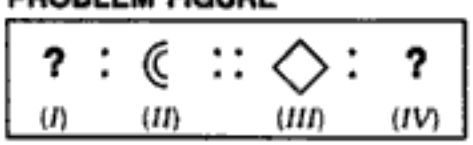


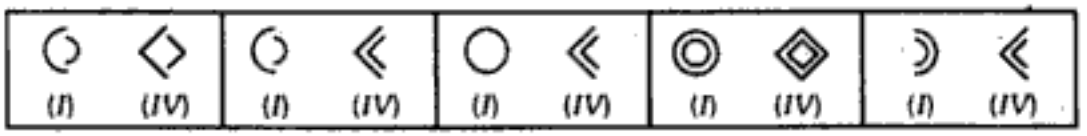
ANSWER FIGURES

(S.B.I.P.O. 1990)

21. **PROBLEM FIGURE**



ANSWER FIGURES



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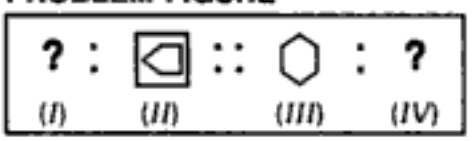
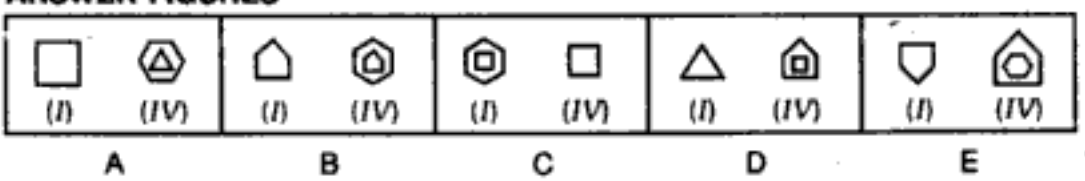


ANSWER FIGURES



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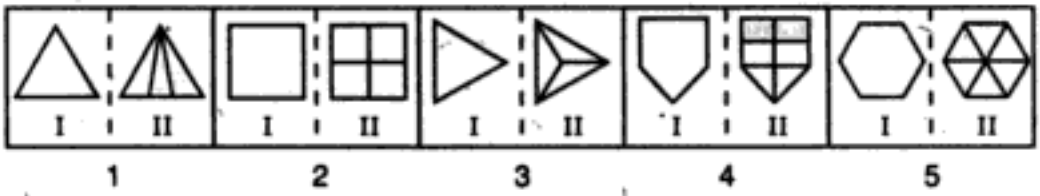

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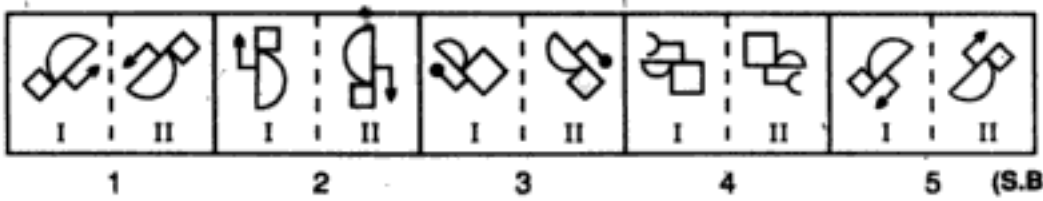

(S.B.I.P.O. 1994)

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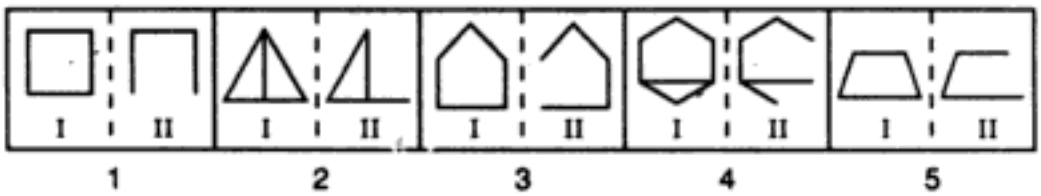

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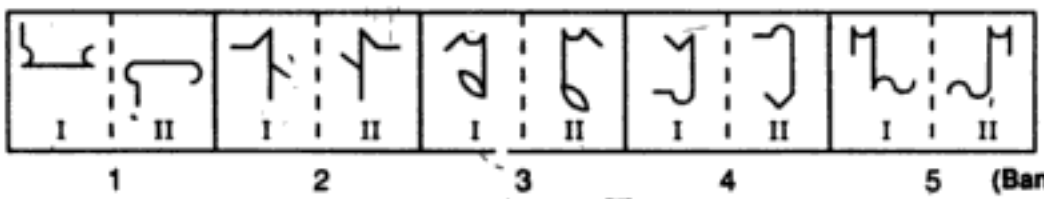
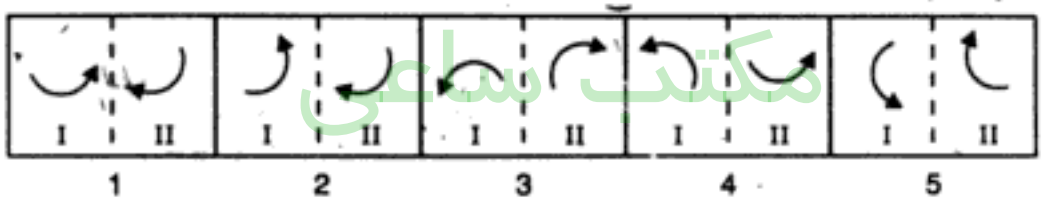


(Bank P.O. 1994)

11.



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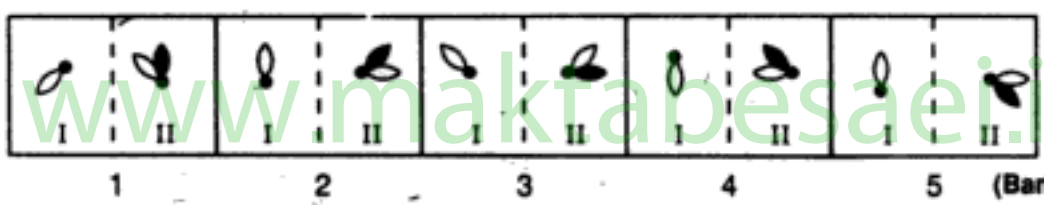

(Bank P.O. 1994)

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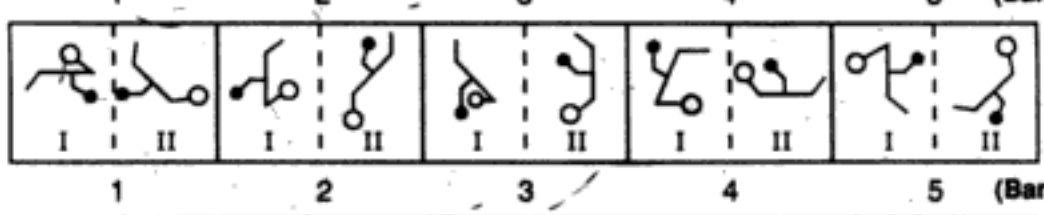

(Bank P.O. 1995)

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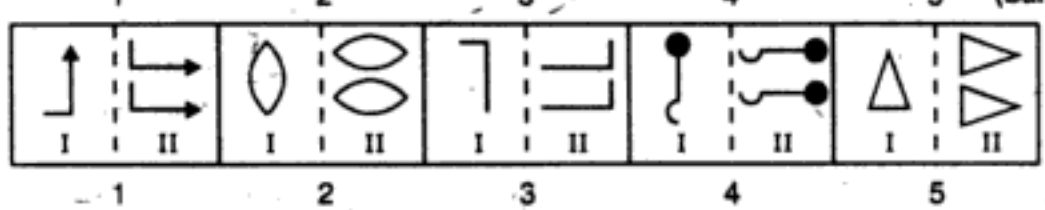

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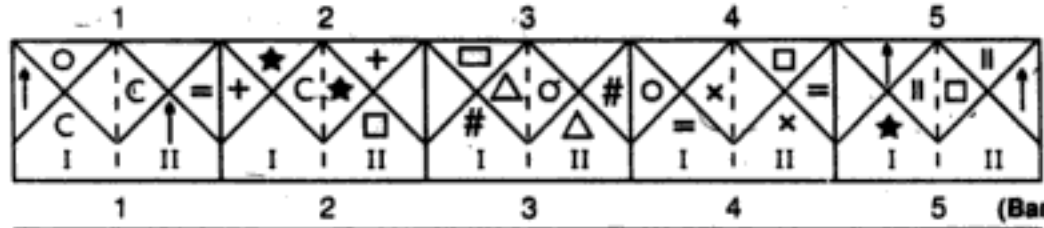

(Bank P.O. 1993)

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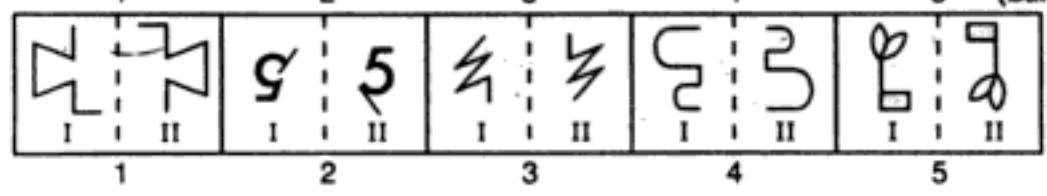
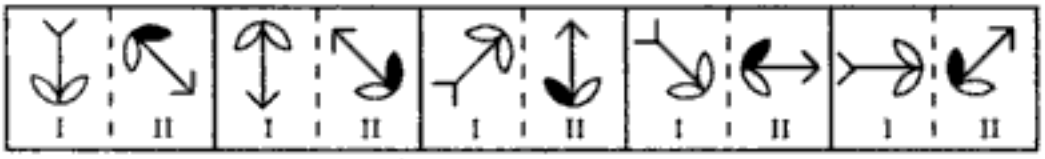
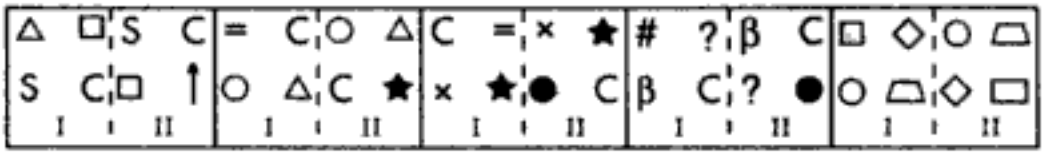
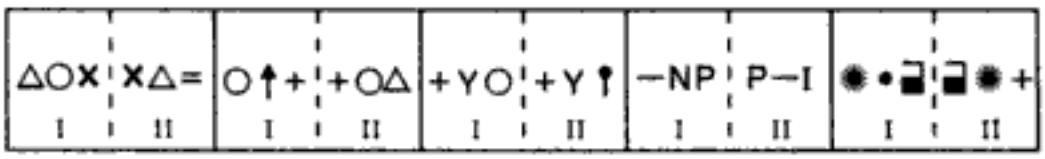


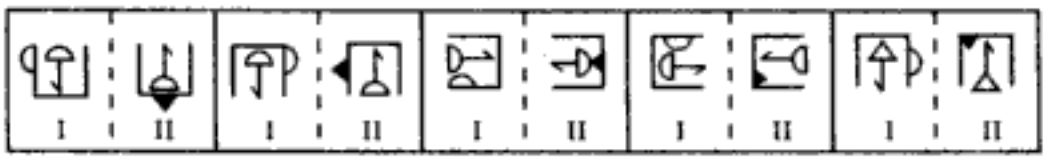
17. 

(Bank P.O. 1994)

18. 

(S.B.I.P.O. 1994)

19. 

20. 

(B.S.R.B. 1994)

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(Bank P.O. 1994)

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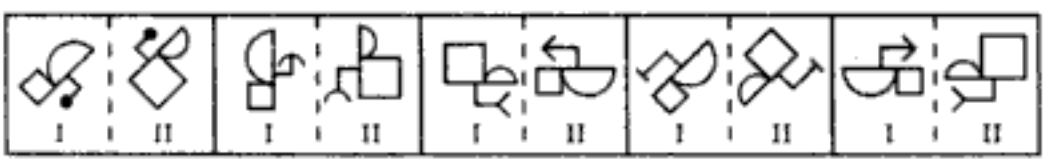
24. 

(Bank P.O. 1993)

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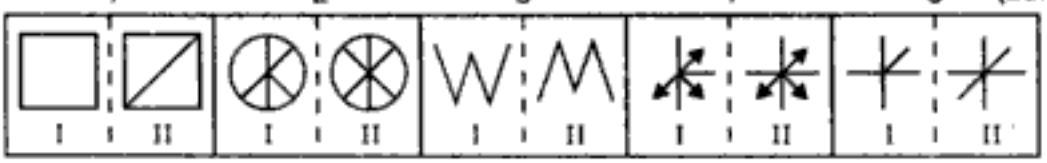
(Bank P.O. 1995)

26. 

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(Bank P.O. 1994)

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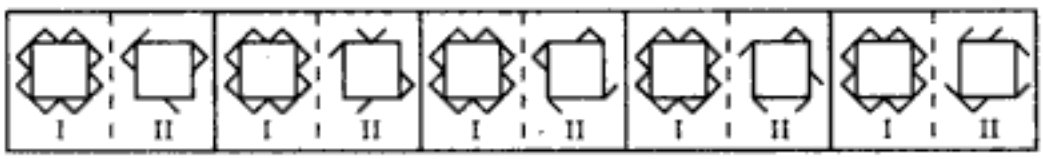
29. 

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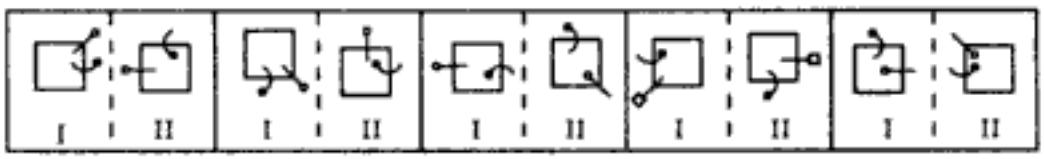
30. 

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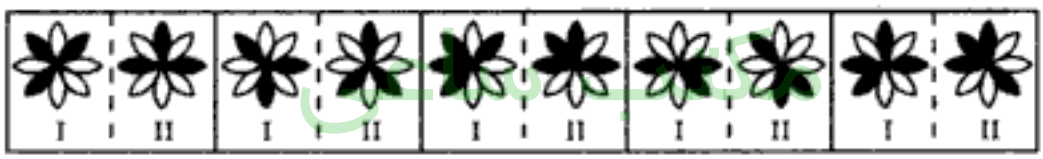
31. 

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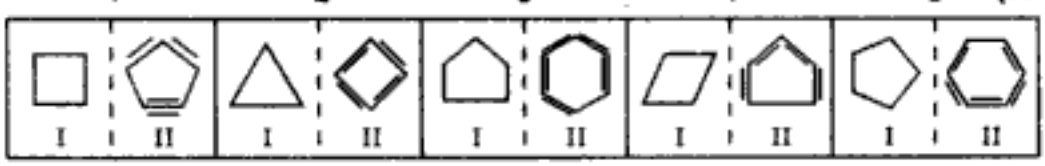
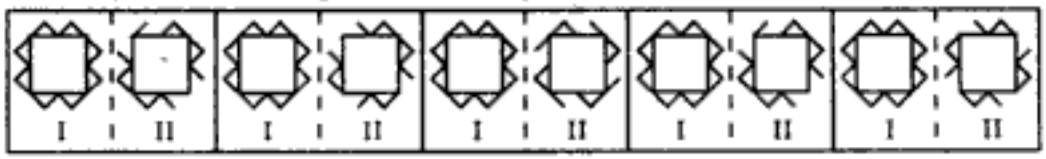
(Bank P.O. 1994)

33. 

34. 

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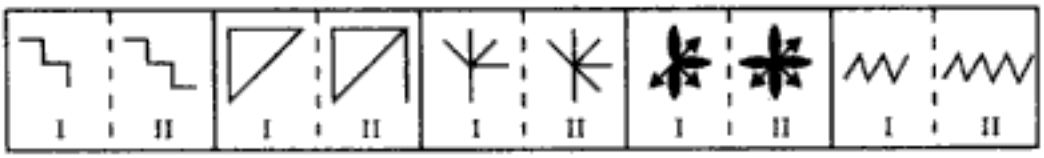
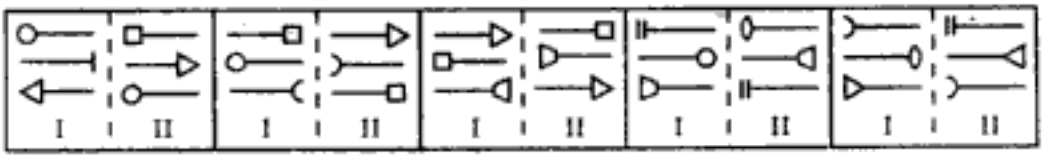
35. 

36. 

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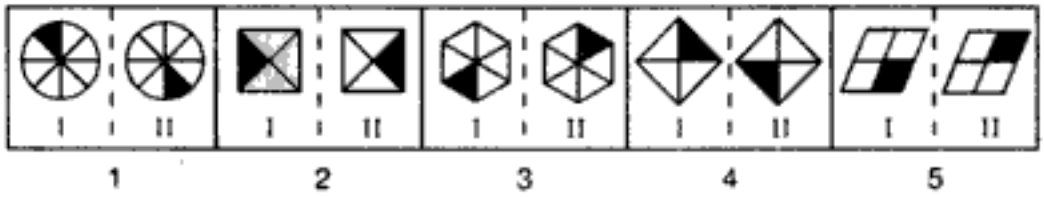

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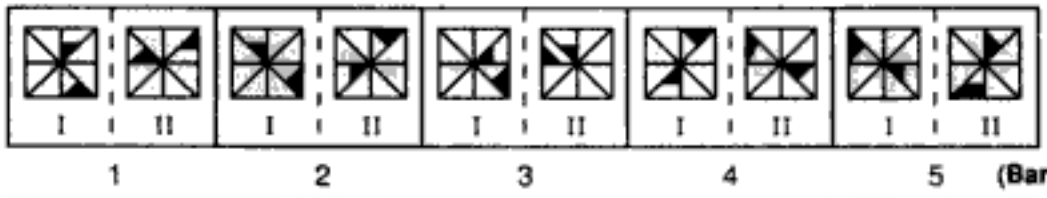

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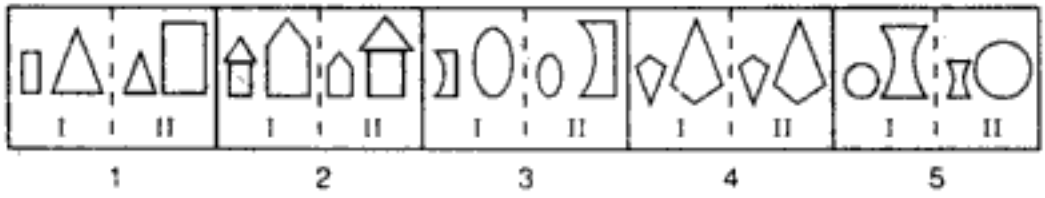

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(Bank P.O. 1994)

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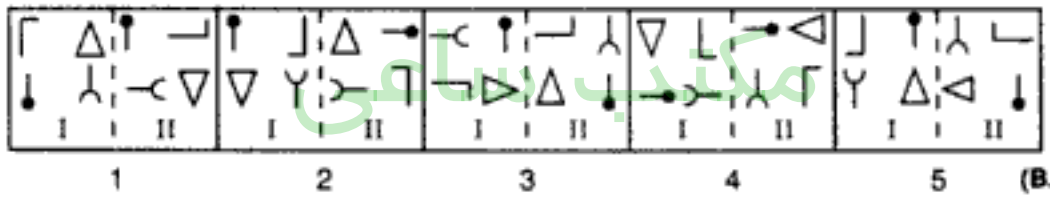

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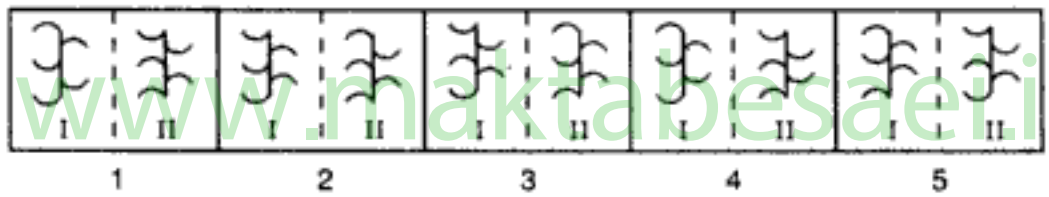

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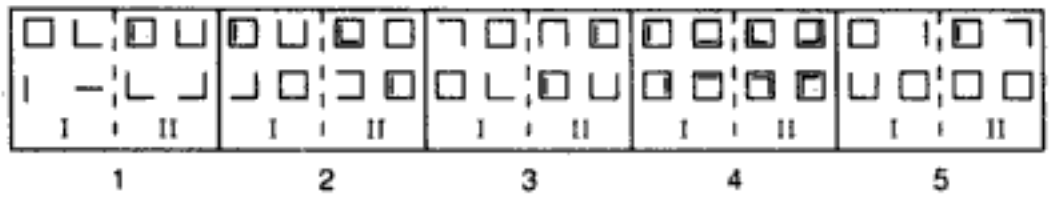

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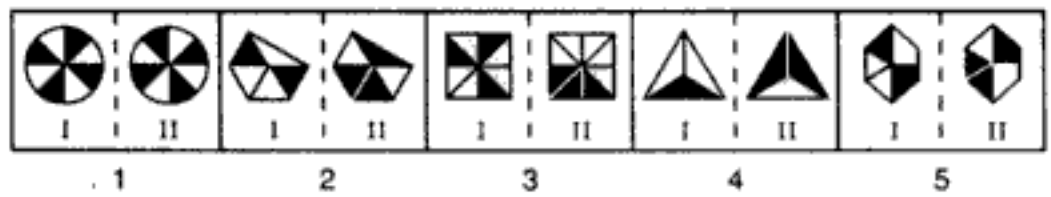

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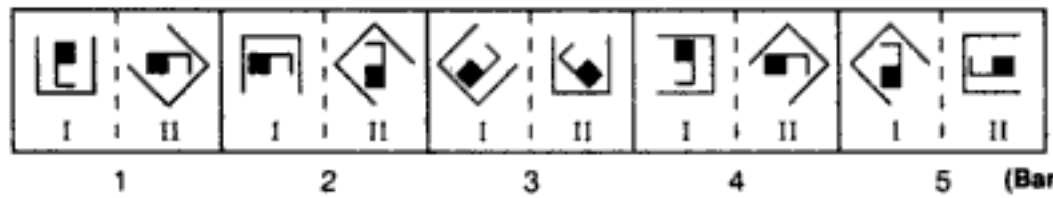

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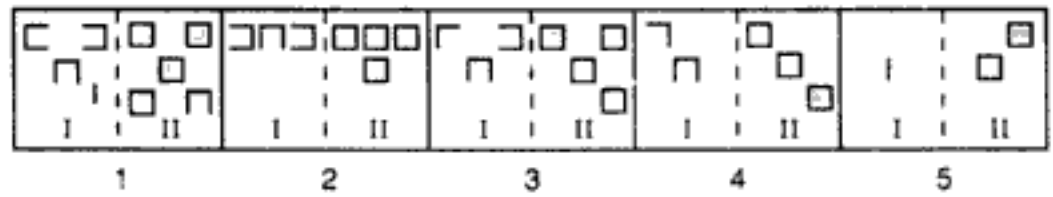
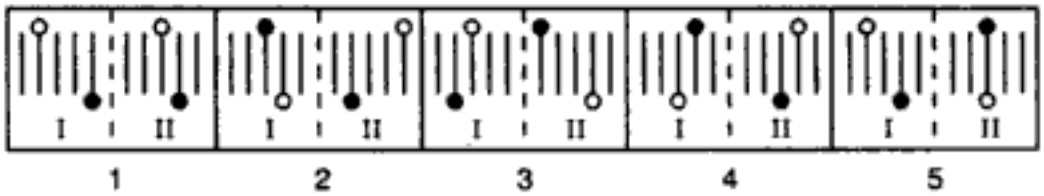
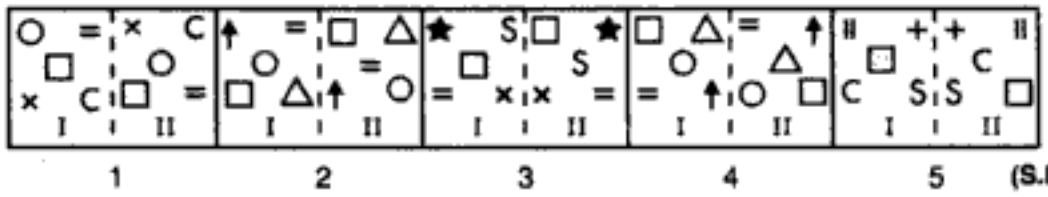


57. 

58. 

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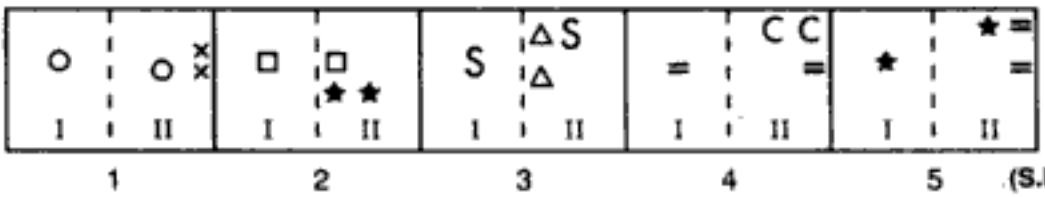
59. 

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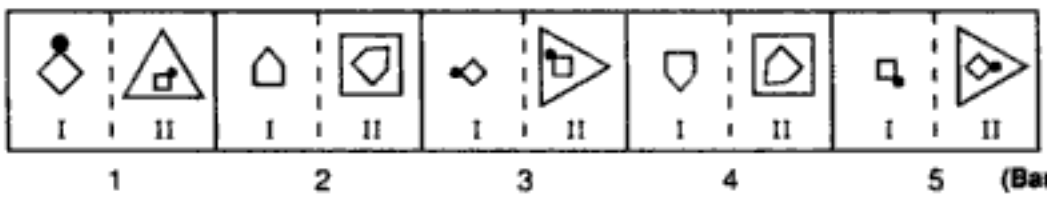
60. 

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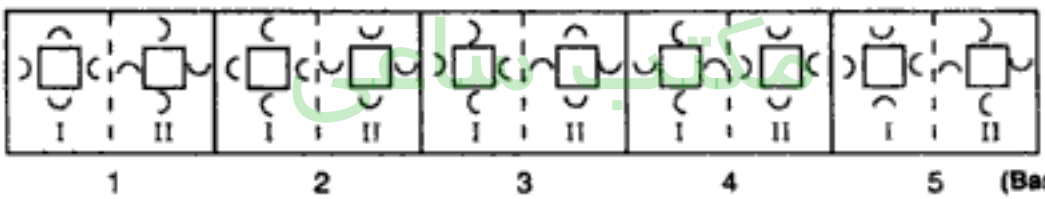
61. 

(Bank P.O. 1994)

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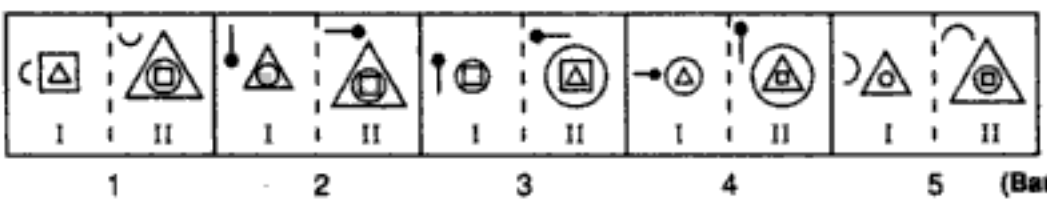
(S.B.I.P.O. 1995)

63. 

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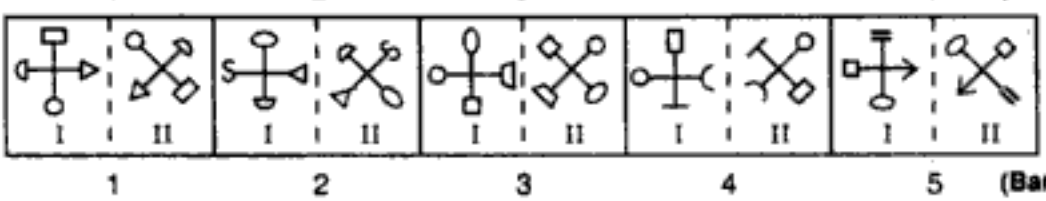
64. 

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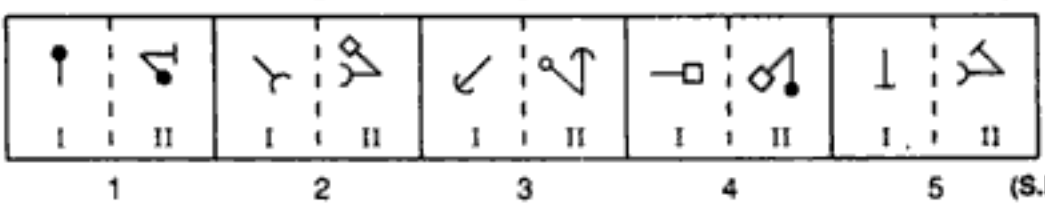
65. 

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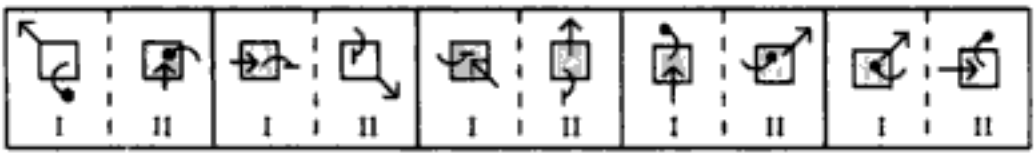

1 2 3 4 5 (Bank P.O. 1995)

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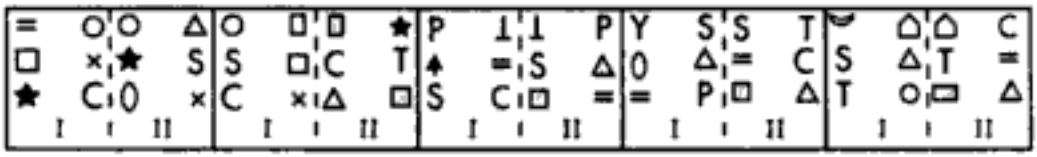

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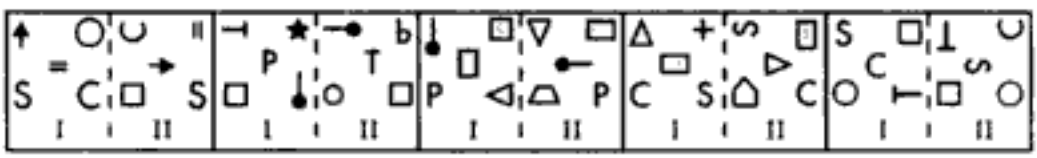

1 2 3 4 5 (S.B.I.P.O. 1995)

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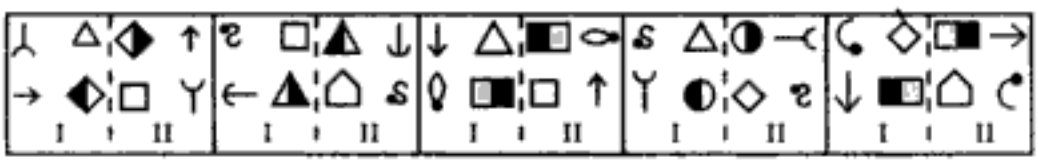

1 2 3 4 5 (Bank P.O. 1994)

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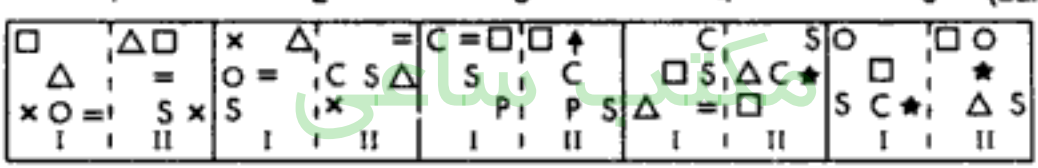


1 2 3 4 5 (Bank P.O. 1995)

fig. formed. The lines are placed alternately inside and outside the fig. This forms (II).

24. (*4*) : In all other pairs, (I) is laterally inverted, the larger portion is made small and the small portion is enlarged, the bent arrow is inverted and the arrowhead is also inverted, to get (II).

25. (*3*) : In all other pairs; the inner part of the fig. in (I) is divided into two and the two parts are laterally inverted. The outer enclosing fig. is reduced in size and placed between the two parts. This gives (II).

26. (*3*) : Except in (*3*), in all other figures one line is added to (I) to form (II).

27. (*3*) : The first figure is inverted, moved ACW and two more leaves are added to it to form the second figure.

28. (*2*) : In all other pairs, the second element is exactly half of (I).

29. (*5*) : In all other pairs, out of the outer 16 lines, ten lines are removed from (I) to form (II).

30. (*4*) : In all other pairs, the arc moves to the adjacent side ACW and rotates through 180° while the pin moves through 'one and a half' side of the square in an ACW direction. This forms (II) from (I).

31. (*5*) : In all other pairs, the first element rotates 45° CW to form (II).

32. (*1*) : In all the pairs, except (*1*); each one of the half shaded squares is rotated 90° ACW to form (II) from (I).

33. (*2*) : In all other pairs, the fig. in (I) is replaced by a new fig. with one more side and the same number of lines as the number of sides in (I) is introduced to form (II).

34. (*3*) : In all other pairs, lines are removed either from similar positions on the four sides, or from consecutive positions or with a gap of one line.

35. (*5*) : In all other pairs, (II) is obtained by adding line one or one leaf to (I).

36. (*3*) : In all other pairs, one of the three symbols is replaced by a new one.

37. (*5*) : In all cases, except (*5*); the shading moves to the vertically opposite position.

38. (*3*) : In all other pairs, the shadings move two steps ACW.

39. (*4*) : In all other pairs, the two symbols in first element interchange positions and sizes to form (II).

40. (*5*) : In all other pairs, the symbols in (I) move in the order  and the symbol that reaches the upper right position gets replaced by a new one and the symbol that reaches the upper left position gets inverted. Thus, (II) is formed.

41. (*1*) : In all other pairs, the symbols move in the order  . The symbol that reaches upper right position rotates 90° CW; the symbols that reach the upper-left and the lower-right positions get inverted and the symbol that reaches the lower-left position rotates 90° ACW. Thus, (II) is formed from (I).

42. (*1*) : In all other pairs, all the arcs except the one in the lower right position, get inverted to form (II) from (I).

43. (*5*) : In all other pairs, one line is added to each one of the complete or incomplete squares to from the second figure from the first one.

44. (*3*) : In all other pairs, the unshaded portions of (I) are shaded while the shaded portions are made un-shaded, to obtain (II).

45. (*4*) : In all other pairs, the outer cup in (I) rotates 45° ACW and the inner fig. rotates 90° ACW and gets inverted or laterally inverted to form (II).

46. (*1*) : In all other pairs, all the incomplete squares in (I) are completed and a new complete square is added to from (II).

69. (4) : In all other pairs, the diagonally opposite symbols in (I) interchange positions. The new upper left symbol gets laterally inverted; the lower right symbol gets inverted upside down; the upper right symbol rotates 90° ACW and a new symbol appears at the lower left position.

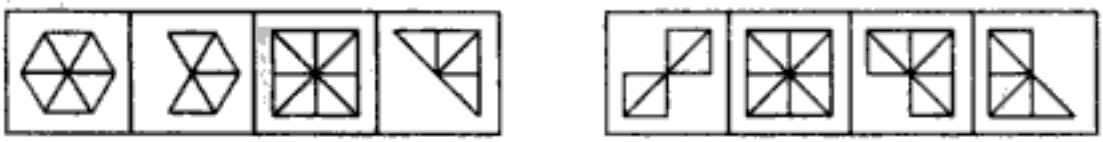
70. (4) : In all other pairs, (II) can be obtained from first by moving the symbols in the order shown below or in orders obtained by rotating the following order through 90° or 180°

The symbol at the encircled position gets replaced by a new one.

TYPE 5 : DETECTING THE RELATIONSHIP AND CHOOSING THE CORRECT SUBSTITUTE

This type of questions contains figures A, B, C and D in the Problem Set and figures 1, 2, 3 and 4 in the Answer Set. It is required to select a figure from the Answer Set which best substitutes fig. D of the Problem set such that element D is related to the element C in the same way as element B is related to element A. If none of the answers is suitable then answer is 5.

Example : **PROBLEM FIGURES** **ANSWER FIGURES**

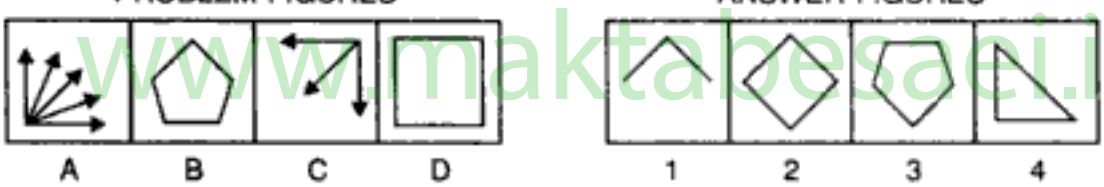


Solution : Here, two triangles from fig. (A) are lost to form fig. (B). With this relationship we find that with the loss of two triangles from fig. (C), fig. (3) will be formed. So, fig. (3) is the answer.

EXERCISE 2E

Directions : ***Each of the following questions bears four figures numbered A, B, C and D which constitute the Problem Set and four other figures numbered 1, 2, 3 and 4 which constitute the Answer Set. Figures A and B are related in a particular way. Establish a similar relationship between figures C and D by choosing a figure from the Answer set that would best substitute fig. (D) in the Problem set. In case if none of the figures of the Answer set is suitable then answer is 5.***

PROBLEM FIGURES ANSWER FIGURES

1.


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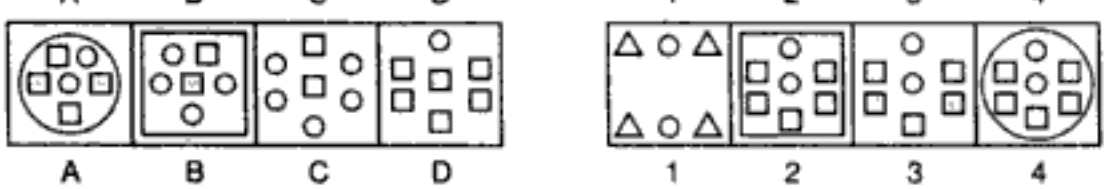

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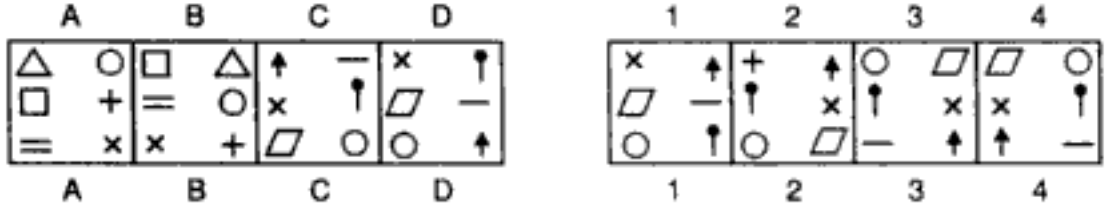

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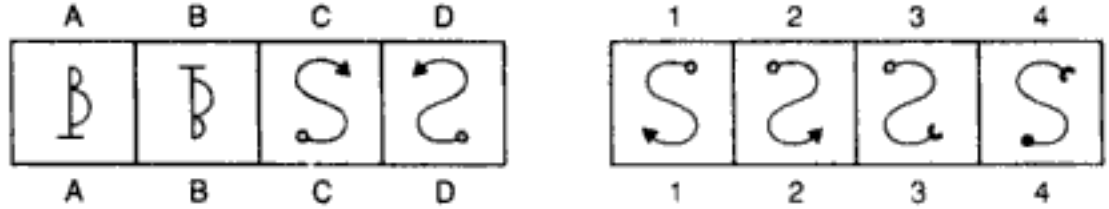
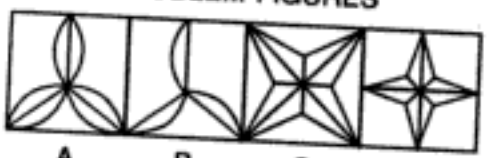
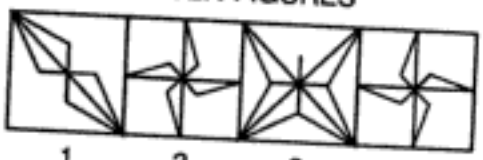


PROBLEM FIGURES

ANSWER FIGURES

6.

A B C D


1 2 3 4

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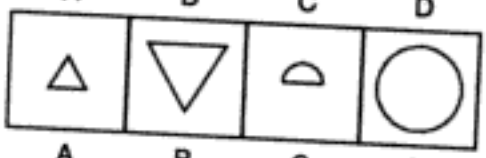
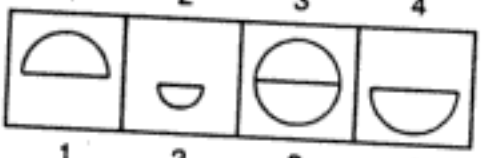

A B C D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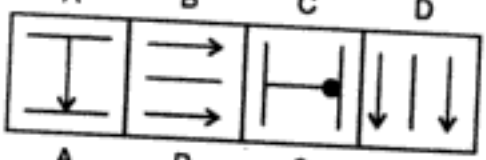
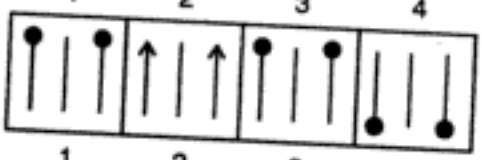

A B C D


1 2 3 4

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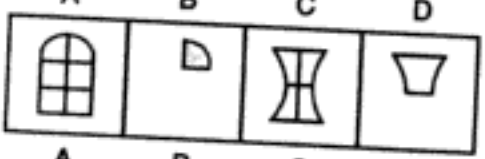
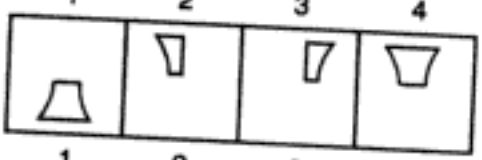
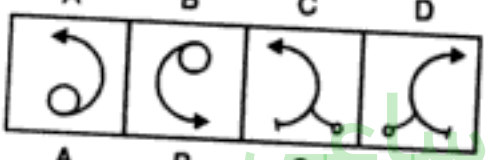
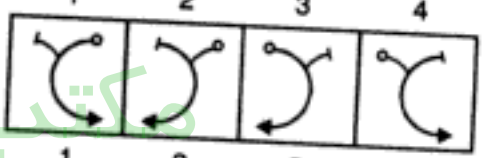
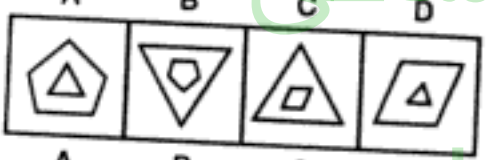
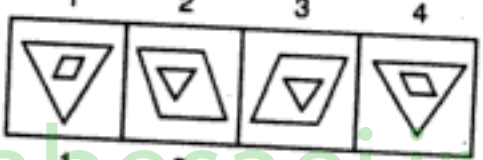

A B C D

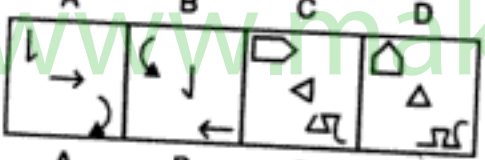

1 2 3 4

10.

A B C D

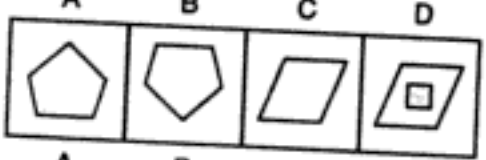

1 2 3 4

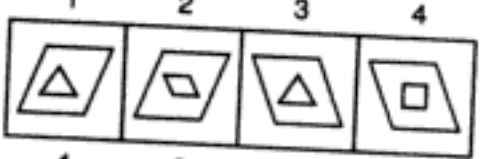
11.

A B C D

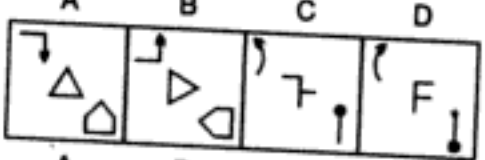

1 2 3 4

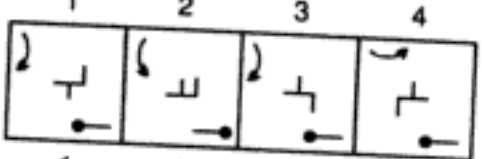
12.

A B C D

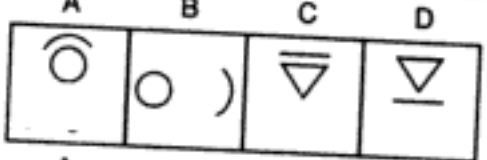

1 2 3 4

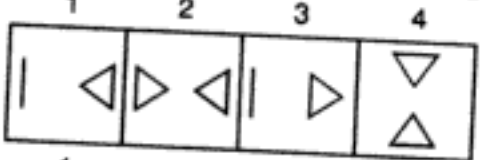
13.

A B C D


1 2 3 4

14.

A B C D


1 2 3 4

15.

A B C D


1 2 3 4

3. CLASSIFICATION

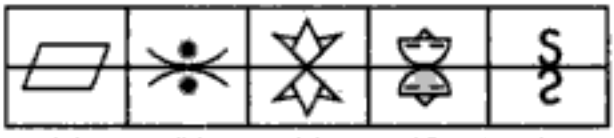
In the chapter on classification, we deal with problems of 'Odd-Man-Out' type. In such problems, we are given a set of figures, such that, all except one have similar characteristics/features. We are required to select the figure which differs from all other figures in the given set. Several other types of problems based upon classification are also discussed in details in this chapter.

TYPE 1 : CHOOSING THE ODD FIGURE

Under this heading, we study problems in each of which we are given five/four figures, out of which all except one are alike in some manner. We have to select the exclusively different figure in the given set.

Following examples will make understanding easier :

Example 1 : ***Given below are five figures, out of which four are alike in some manner. Find the figure which differs from all other figures.***



(a) (b) (c) (d) (e)

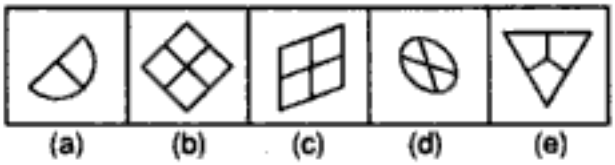
Solution : Except in fig (a), in all other figures the figures on either side of the central horizontal line are inverted images of each other. Hence, fig. (a) is the answer.

Example 2 : ***Out of the following five figures, four are alike in some manner and one differs from these in that manner. Select the odd figure.***

(a) (b) (c) (d) (e)

Solution : Except in fig. (b), in all other figures, the outer figure encloses a figure with one side more than the outer figure. Hence, fig. (b) is the answer.

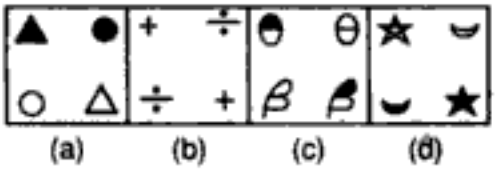
Example 3 : ***From amongst the following five figures, select the one which is different from all others.***



(a) (b) (c) (d) (e)

Solution : Except fig. (d), all other figures are divided into equal parts. Hence, fig. (d) is the answer.

Example 4 : ***From amongst the following four figures, select the one which is different from all others.***



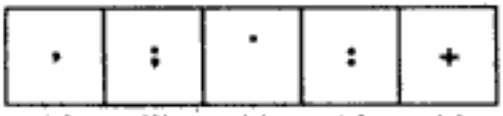
(a) (b) (c) (d)

(C.B.I. 1993)

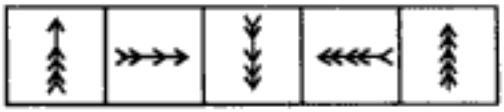
Solution : In all the figures except fig. (c), the similar symbols (one black and the other white) appear at diagonally opposite corners while in fig. (c), they appear in adjacent corners.

EXERCISE 3A

Directions : *Out of the five figures (a), (b), (c), (d) and (e), given in each problem, four are similar in a certain way. However, one figure is not like the other four. Choose the figure which is different from the rest.*

1. 
(a) (b) (c) (d) (e)

2. 
(a) (b) (c) (d) (e)

3. 
(a) (b) (c) (d) (e)

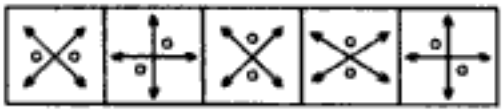
(B.S.R.B. 1990)

4. 
(a) (b) (c) (d) (e)

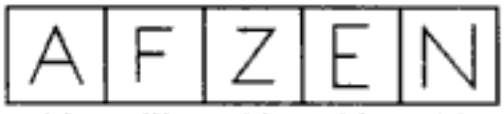
5. 
(a) (b) (c) (d) (e)

6. 
(a) (b) (c) (d) (e)

7. 
(a) (b) (c) (d) (e)

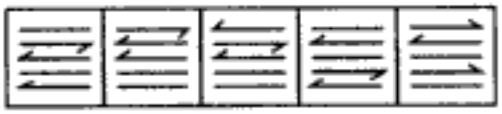
8. 
(a) (b) (c) (d) (e)

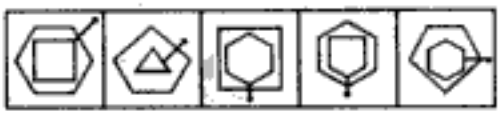
(Bank P.O. 1991)

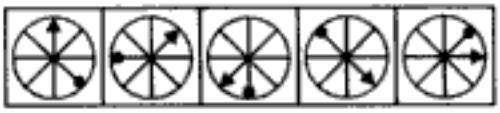
9. 
(a) (b) (c) (d) (e)

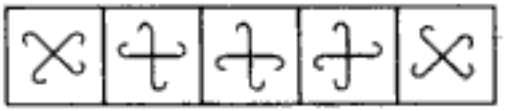
10. 
(a) (b) (c) (d) (e)

(B.S.R.B. 1995)

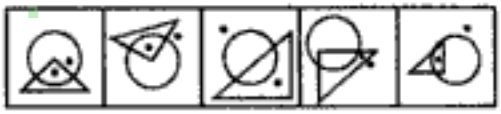
11. 
(a) (b) (c) (d) (e)

12. 
(a) (b) (c) (d) (e)

13. 
(a) (b) (c) (d) (e)

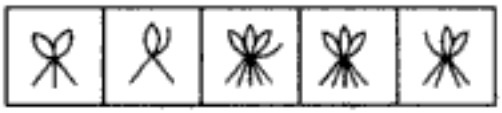
14. 
(a) (b) (c) (d) (e)

(B.S.R.B. 1996)

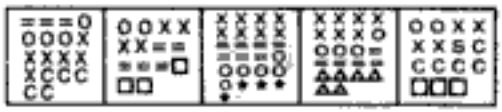
15. 
(a) (b) (c) (d) (e)

16. 
(a) (b) (c) (d) (e)

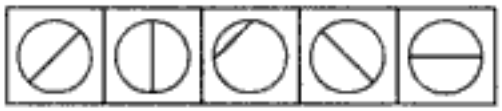
(Bank P.O. 1994)

17. 
(a) (b) (c) (d) (e)

18. 
(a) (b) (c) (d) (e)

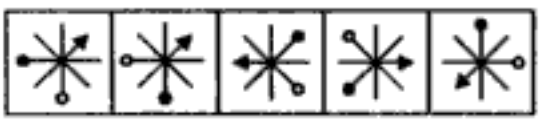
19. 
(a) (b) (c) (d) (e)

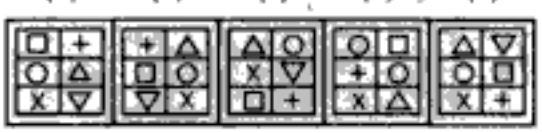
(B.S.R.B. 1995)

20. 
(a) (b) (c) (d) (e)

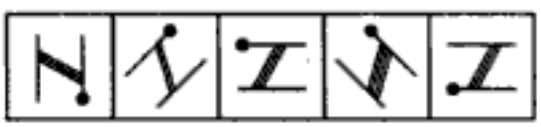
43. 
(a) (b) (c) (d) (e)

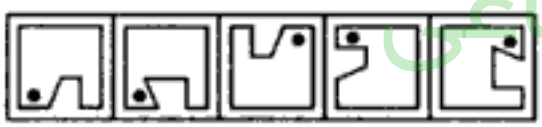
(B.S.R.B. 1995)

44. 
(a) (b) (c) (d) (e)

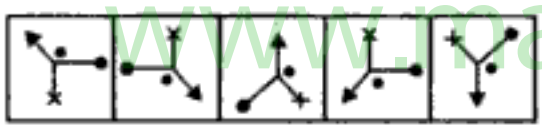
45. 
(a) (b) (c) (d) (e)

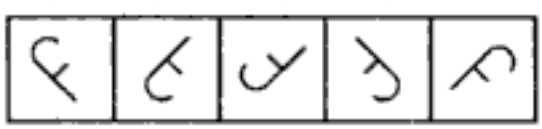
46. 
(a) (b) (c) (d) (e)

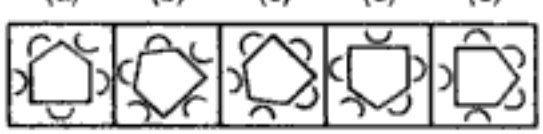
47. 
(a) (b) (c) (d) (e)

48. 
(a) (b) (c) (d) (e)

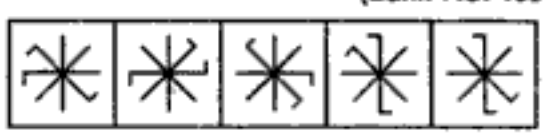
(B.S.R.B. 1992)

49. 
(a) (b) (c) (d) (e)

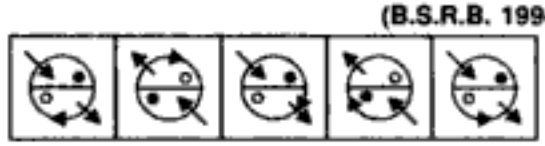
50. 
(a) (b) (c) (d) (e)

51. 
(a) (b) (c) (d) (e)

(Bank P.O. 1994)

52. 
(a) (b) (c) (d) (e)

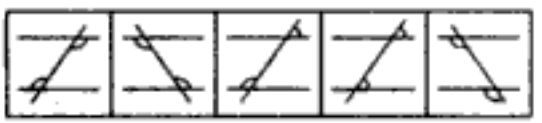
(B.S.R.B. 1994)

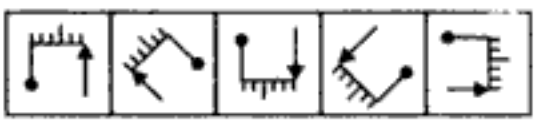
53. 
(a) (b) (c) (d) (e)

54. 
(a) (b) (c) (d) (e)

55. 
(a) (b) (c) (d) (e)

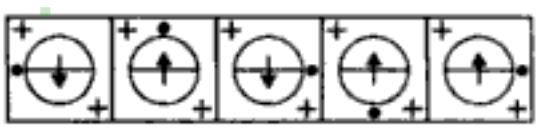
(B.S.R.B. 1995)

56. 
(a) (b) (c) (d) (e)

57. 
(a) (b) (c) (d) (e)

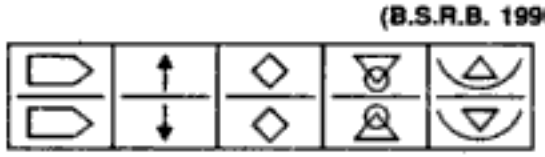
(B.S.R.B. 1995)

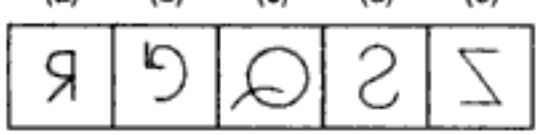
58. 
(a) (b) (c) (d) (e)

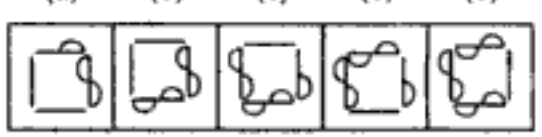
59. 
(a) (b) (c) (d) (e)

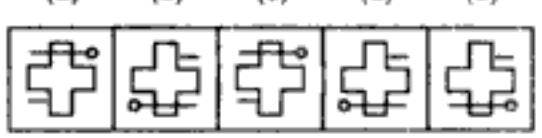
60. 
(a) (b) (c) (d) (e)

(B.S.R.B. 1996)

61. 
(a) (b) (c) (d) (e)

62. 
(a) (b) (c) (d) (e)

63. 
(a) (b) (c) (d) (e)

64. 
(a) (b) (c) (d) (e)

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109.

(a) (b) (c) (d) (e)

110.

(a) (b) (c) (d) (e)

111.

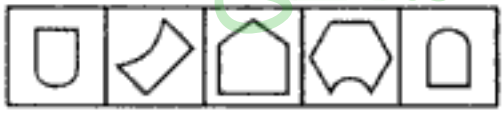
(a) (b) (c) (d) (e)

112.

(a) (b) (c) (d) (e)
(B.S.R.B. 1992)

113.

(a) (b) (c) (d) (e)
(B.S.R.B. 1994)

114.

(a) (b) (c) (d) (e)

115.

(a) (b) (c) (d) (e)
(B.S.R.B. 1996)

116.

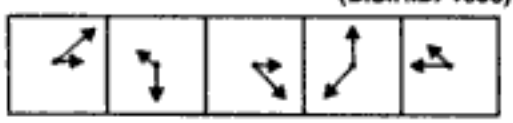
(a) (b) (c) (d) (e)
(B.S.R.B. 1994)

117.

(a) (b) (c) (d) (e)

118.

(a) (b) (c) (d) (e)
(B.S.R.B. 1995)

119.

(a) (b) (c) (d) (e)

120.

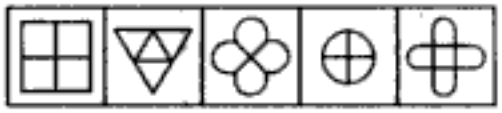
(a) (b) (c) (d) (e)

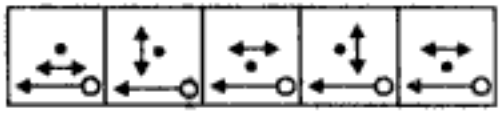
121.

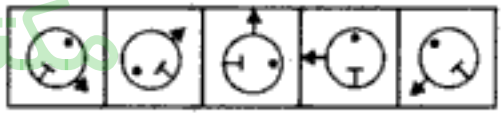
(a) (b) (c) (d) (e)

122.

(a) (b) (c) (d) (e)

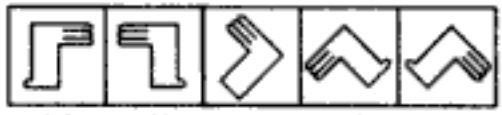
123.

(a) (b) (c) (d) (e)

124.

(a) (b) (c) (d) (e)

125.

(a) (b) (c) (d) (e)
(B.S.R.B. 1992)

126.

(a) (b) (c) (d) (e)

127.

(a) (b) (c) (d) (e)

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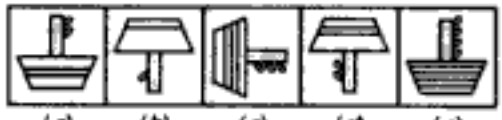
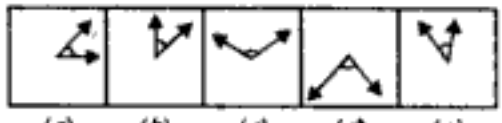

(a) (b) (c) (d) (e)

129.

(a) (b) (c) (d) (e)

130.

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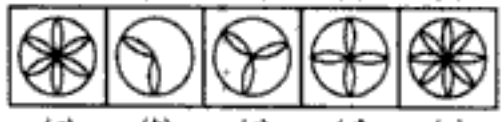
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(B.S.R.B. 1994)

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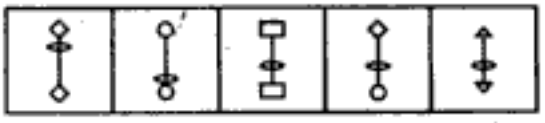
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156.

(a) (b) (c) (d) (e)

(B.S.R.B. 1992)

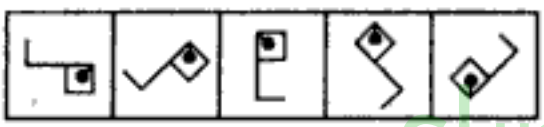
157.

(a) (b) (c) (d) (e)

158.

(a) (b) (c) (d) (e)

(B.S.R.B 1993)

159.

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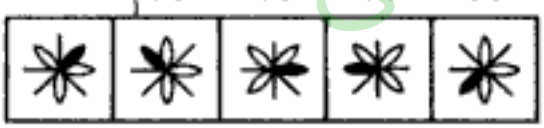
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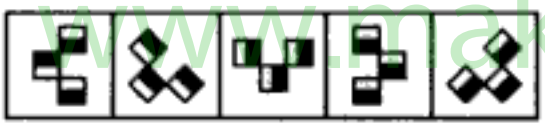
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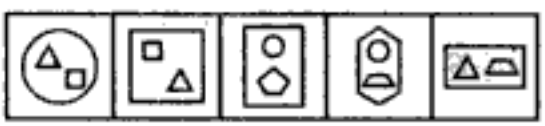
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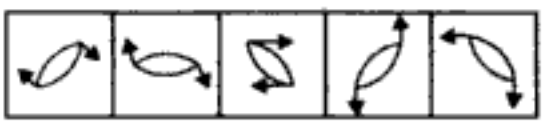
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(Bank P.O. 1991)

164.

(a) (b) (c) (d) (e)

165.

(a) (b) (c) (d) (e)

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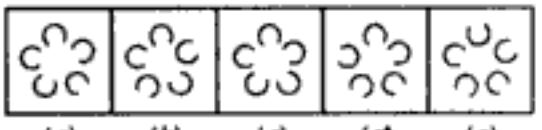
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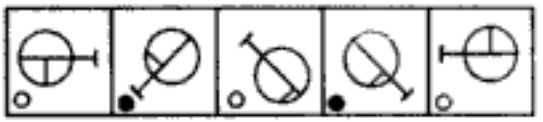
167.

(a) (b) (c) (d) (e)

(B.S.R.B. 1993)

168.

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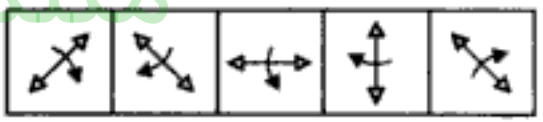
169.

(a) (b) (c) (d) (e)

(Bank P.O. 1989)

170.

(a) (b) (c) (d) (e)

171.

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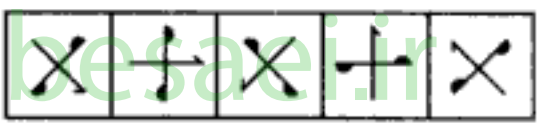
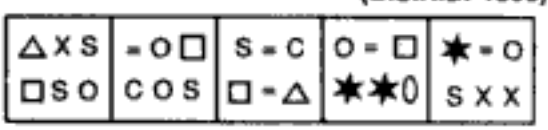
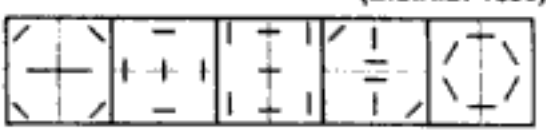

(a) (b) (c) (d) (e)

(B.S.R.B. 1993)

173.

(a) (b) (c) (d) (e)

(B.S.R.B. 1996)

174.

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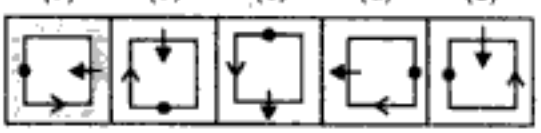
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(Bank P.O. 1993)

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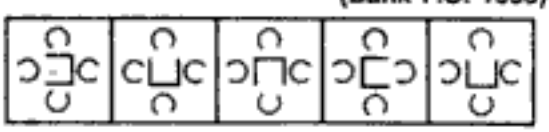
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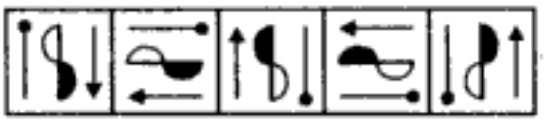
199. 
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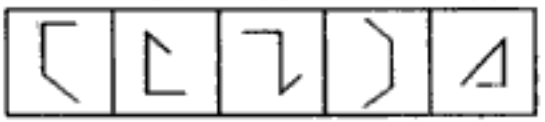
200. 
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(Bank P.O. 1991)

201. 
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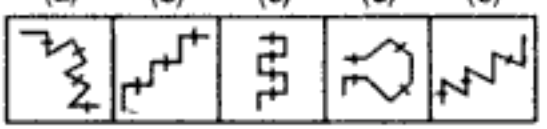
202. 
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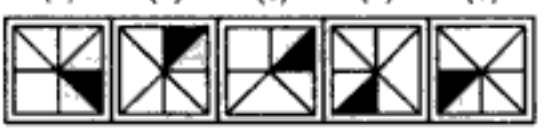
203. 
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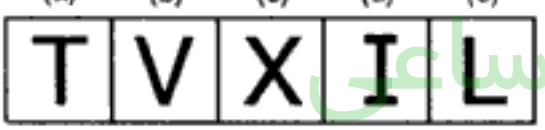
204. 
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205. 
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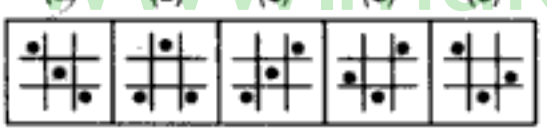
206. 
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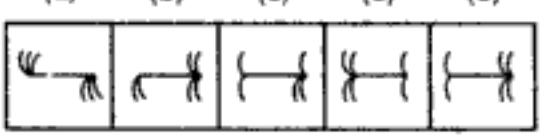
207. 
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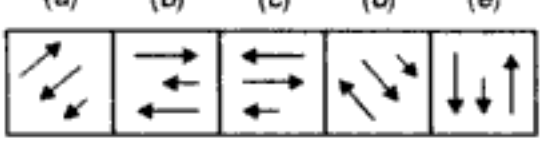
208. 
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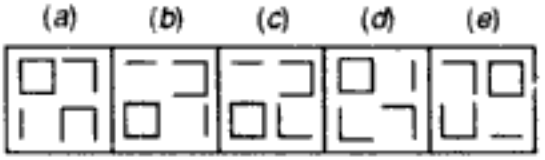
209. 
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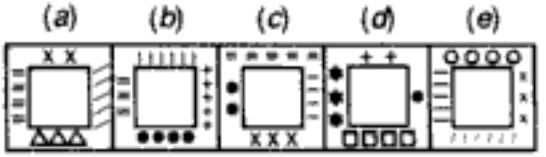
210. 
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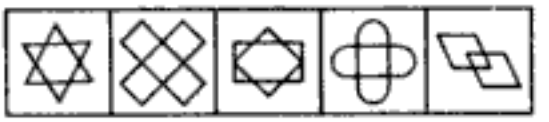
(B.S.R.B. 1996)

211. 
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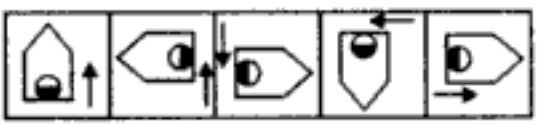
212. 
(a) (b) (c) (d) (e)

(Bank P.O. 1993)

213. 
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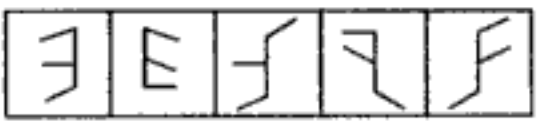
214. 
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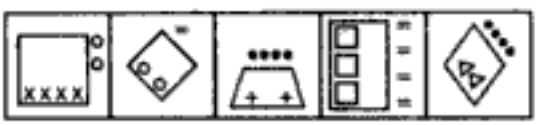
215. 
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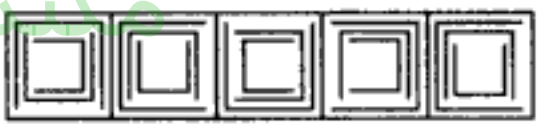
216. 
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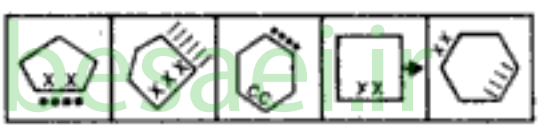
217. 
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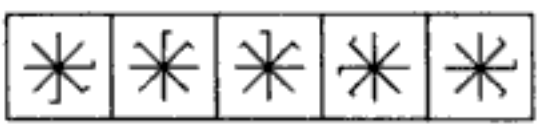
218. 
(a) (b) (c) (d) (e)

(Bank P.O. 1989)

219. 
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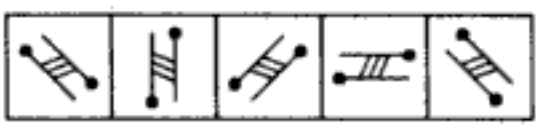
220. 
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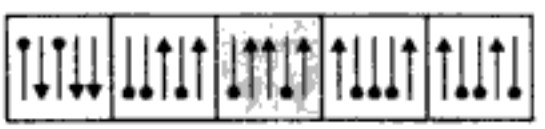
221. 
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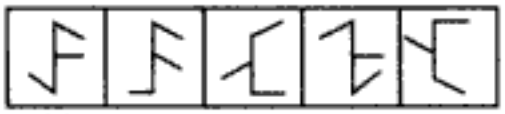
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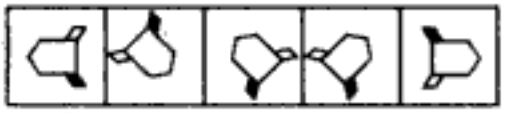
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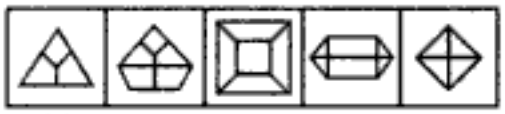
(B.S.R.B. 1993)

179.

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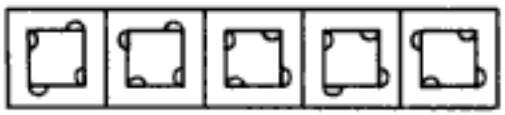
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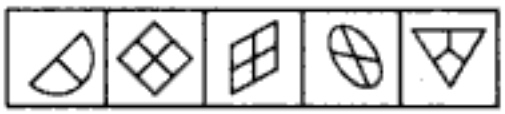
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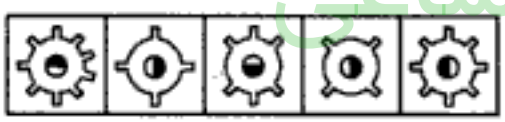
(Bank P.O. 1993)

182.

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183.

(a) (b) (c) (d) (e)

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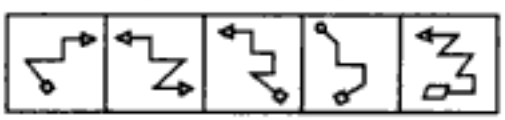
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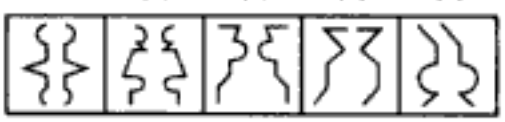
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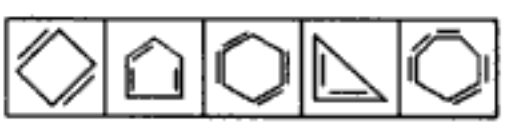
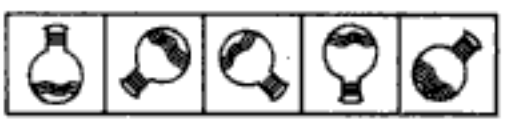

(a) (b) (c) (d) (e)

(Bank P.O. 1989)

187.

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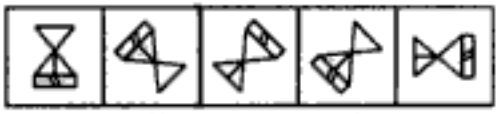
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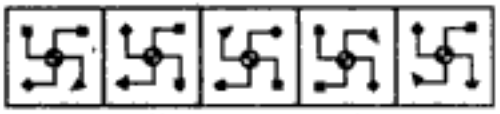
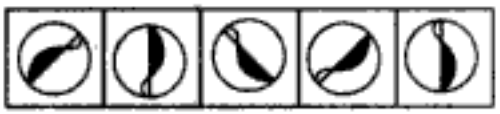

(a) (b) (c) (d) (e)

190.

(a) (b) (c) (d) (e)

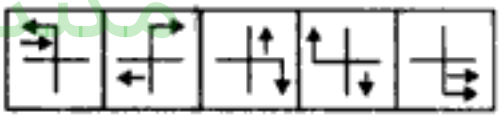
(Bank P.O. 1991)

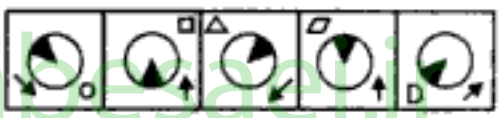
191.

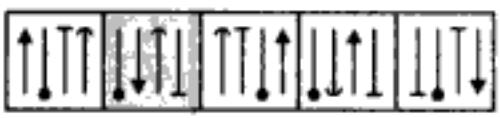
(a) (b) (c) (d) (e)

192.

(a) (b) (c) (d) (e)

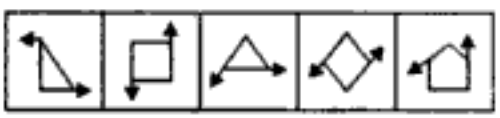
193.

(a) (b) (c) (d) (e)

194.

(a) (b) (c) (d) (e)

195.

(a) (b) (c) (d) (e)

196.

(a) (b) (c) (d) (e)

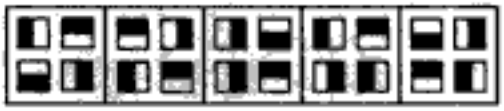
197.

(a) (b) (c) (d) (e)

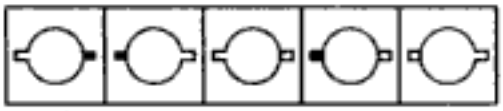
(Bank P.O. 1994)

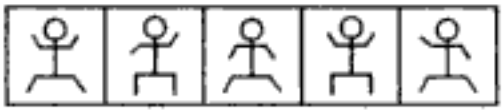
198.

(a) (b) (c) (d) (e)

222. 
(a) (b) (c) (d) (e)
(Bank P.O. 1993)

223. 
(a) (b) (c) (d) (e)

224. 
(a) (b) (c) (d) (e)

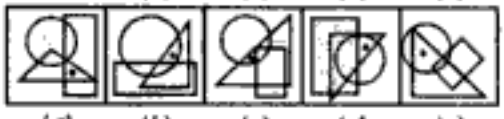
225. 
(a) (b) (c) (d) (e)
(B.S.R.B. 1996)

226. 
(a) (b) (c) (d) (e)

227. 
(a) (b) (c) (d) (e)

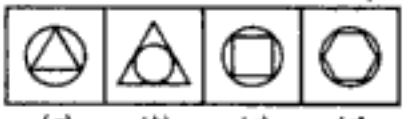
228. 
(a) (b) (c) (d) (e)
(Bank P.O. 1994)

229. 
(a) (b) (c) (d) (e)

230. 
(a) (b) (c) (d) (e)

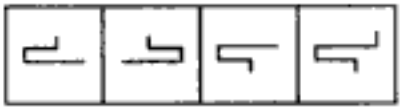
Directions : ***Choose the figure which is different from the others.***

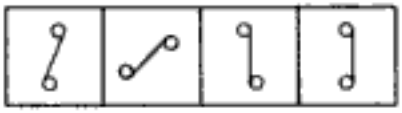
231. 
(a) (b) (c) (d)
(I. Tax, 1994)

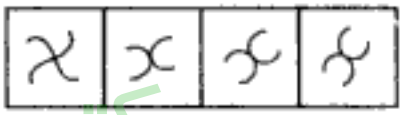
231. 
(a) (b) (c) (d)
(S.S.C. 1994)

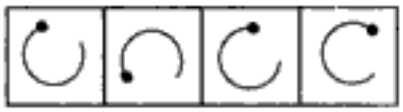
233. 
(a) (b) (c) (d)

234. 
(a) (b) (c) (d)

235. 
(a) (b) (c) (d)
(Central Excise, 1992)

236. 
(a) (b) (c) (d)
(Asstt. Grade, 1995)

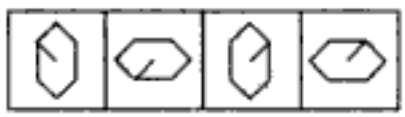
237. 
(a) (b) (c) (d)
(U.D.C. 1995)

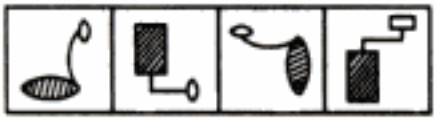
238. 
(a) (b) (c) (d)

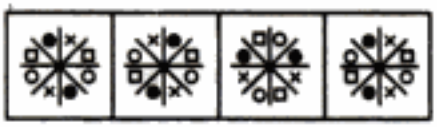
239. 
(a) (b) (c) (d)
(C.B.I. 1995)

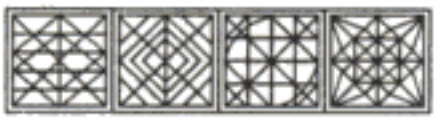
240. 
(a) (b) (c) (d)
(S.S.C. 1995)

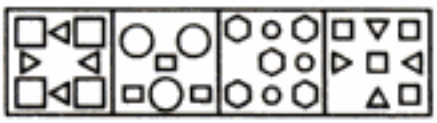
241. 
(a) (b) (c) (d)
(C.B.I. 1994)

242. 
(a) (b) (c) (d)
(Section Officers', 1993)

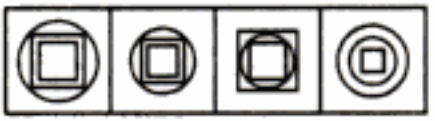
263. 
(a) (b) (c) (d)

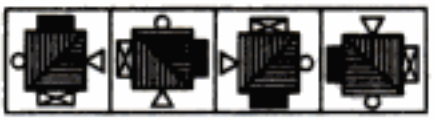
264. 
(a) (b) (c) (d)
(S.S.C. 1994)

265. 
(a) (b) (c) (d)
(U.D.C. 1995)

266. 
(a) (b) (c) (d)

267. 
(a) (b) (c) (d)
(C.B.I. 1993)

268. 
(a) (b) (c) (d)

269. 
(a) (b) (c) (d)
(I. Tax, 1996)

270. 
(a) (b) (c) (d)
(C.B.I. 1994)

149. (*d*) : All other figures consist of three straight lines and one semi-circle.
150. (*d*) : In all other figures, the line appears opposite the arc.
151. (*a*) : All other figures can be rotated into each other.
152. (*e*) : In all other figures, only one edge of the cuboid is absent.
153. (*d*) : In all other figures, the circle contains equal chords.
154. (*b*) : Fig. (*a*) can be rotated into fig. (*c*) and fig. (*d*) can be rotated into fig. (*e*).
155. (*d*) : The figures on either side of the line are different only in fig. (*d*).
156. (*d*) : In all other figures, the arrow and the pin are at right angles to each other.
157. (*e*) : In all other figures, the shadings in the two halves of the circle occupy similar positions.
158. (*d*) : In all other figures, a line starts from one of the ends of the diagonal of the quadrilateral and intersects one of the sides of the quadrilateral.
159. (*d*) : In all other figures, the pin inside the square is attached to one end of the extended side of the square.
160. (*a*) : All other figures have a line twice the length of a leaf.
161. (*a*) : In all other figures, the three squares have the same halves shaded.
162. (*b*) : Other figures contain a large figure enclosing two other different figures; while in fig. (*b*) the larger figure contains two figures one of which is similar to itself.
163. (*e*) : In each of the other figures, the two arrows are in the opposite directions.
164. (*d*) : In all other figures, one arrow points towards the right hand side and two arrows point towards the left hand side.
165. (*c*) : All other figure can be rotated into one another.
166. (*c*) : This is the only figure in which all the arcs are curved inside.
167. (*e*) : In each of the other cases, the outer figure encloses a similar dark figure.
168. (*c*) : If the main figure in each case is rotated such that the line outside the circle and perpendicular to the diameter of the circle comes on the top, then in each figure except (*c*), the small line inside the circle and perpendicular to the diameter occurs on the right hand side while in fig. (*c*), it occurs on the left hand side.
169. (*a*) : In all other figures, the outer figure encloses a figure with two less number of sides.
170. (*b*) : If all the figures are rotated to a position with the flat side up, then in each one of the figures except fig. (*b*) an arrow appears on the top and another one appears on the right hand side.
171. (*c*) : All other figures can be rotated into each other.
172. (*c*) : In all other figures, one of the lines has a bent end while a semi circle on the other line lies towards the bend.
173. (*a*) : In all other figures, the symbols which are repeated are placed either in the same row or in the same column.
174. (*d*) : Only fig. (*d*) is not symmetrical about the dotted line.
175. (*e*) : In all other figures, the arrow head on the square appears on the side adjacent to the side having the dot.
176. (*a*) : In all the figures, two arcs are curved inwards and two outwards. But only in fig. (*a*), the arc at the open end of the central figure is curved outwards.
177. (*b*) : In all other figures, the parallel lines attached to the vertical line, lie on either sides of the vertical line.
178. (*d*) : All other figures can be rotated into each other.
179. (*c*) : All other figures are divided into as many parts as is the number of sides in the figure.
180. (*c*) : In each of the other figures, two arcs are inside the square and two are outside the square.
181. (*d*) : In all other cases, the lines drawn inside the figure divide it into equal parts.
182. (*a*) : In all other figures, the wheel has an even number of projections.
183. (*c*) : Only in fig. (*c*), both the flags are oriented in the same direction.

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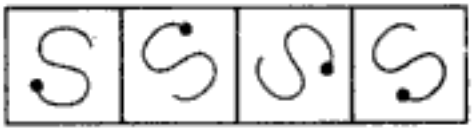
262. (*d*) : In all other alternatives, the two figures are identical, though different in size.
263. (*b*) : In all other alternatives, a big, shaded figure is attached to a similar, small, unshaded figure.
264. (*b*) : Only in this figure, the symbols in all the vertically opposite segments are identical.
265. (*c*) : This is the only pattern consisting of curved lines.
266. (*c*) : All other figures consist of an equal number of two types of symbols.
267. (*b*) : All other figures consist of two identical elements and two other different elements.
268. (*c*) : This is the only figure in which the circle and the square fall alternately.
269. (*c*) : All other figures can be rotated into each other.
270. (*c*) : All other figures are divided into four parts.

TYPE 2 : CHOOSING A SIMILAR FIGURE

The problems on this type of classification, involve four un-numbered figures followed by five other figures numbered as 1, 2, 3, 4, & 5. The four un-numbered figures forming the Problem Set are alike in a certain manner. A figure, from amongst the numbered ones forming the Answer Set, is to chosen such that it is similar to the Problem figures in that manner.

Example :

Problem Figures



Answer Figures

1 2 3 4 5

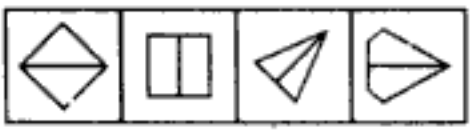
Solution : Clearly, all the problem figures can be rotated into each other. Fig. (5) is also similar to these in that respect.
Hence, fig. (5) is the answer.

EXERCISE 3B

Directions : ***The following problems contain four un-numbered figures forming the Problem Set and five numbered figures (1, 2, 3, 4 & 5) forming the Answer Set. The four Problem figures have certain common features. Select a figure from amongst the Answer Figures which is similar to the Problem Figures.***

Problem Figures **Answer Figures**

1.



1 2 3 4 5

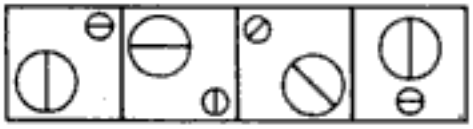
2.

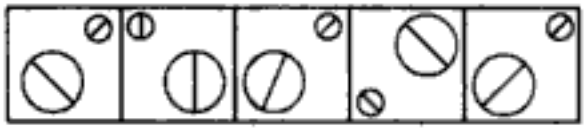
1 2 3 4 5

3.

1 2 3 4 5

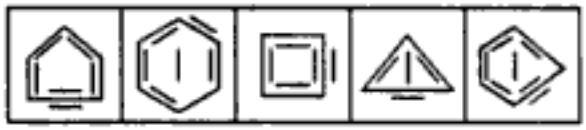
4.





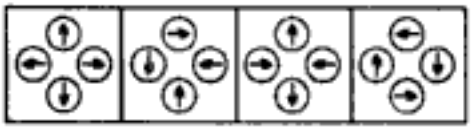
1 2 3 4 5

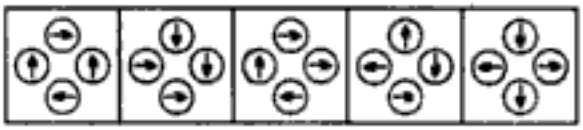
5.



1 2 3 4 5

6.





1 2 3 4 5

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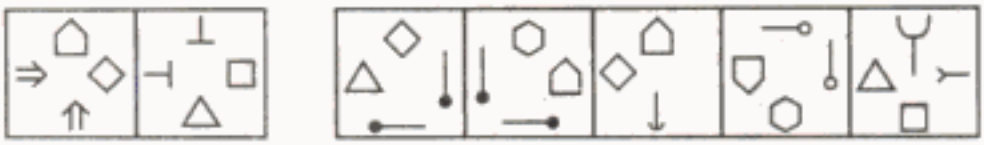
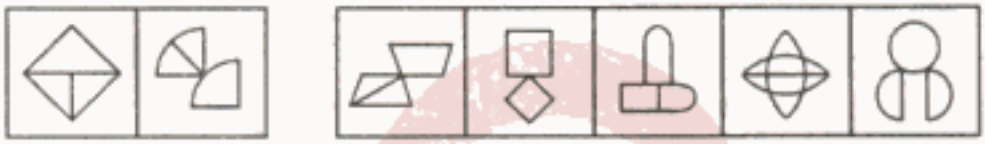
14. 
1 2 3 4 5 (Bank P.O. 1995)

15. 
1 2 3 4 5

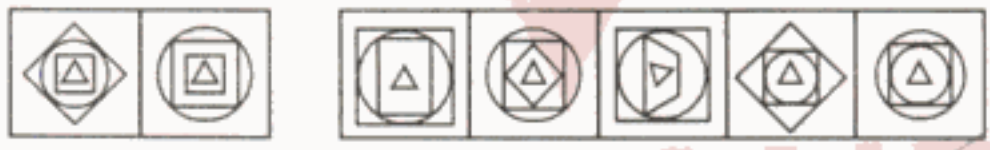
16. 
1 2 3 4 5

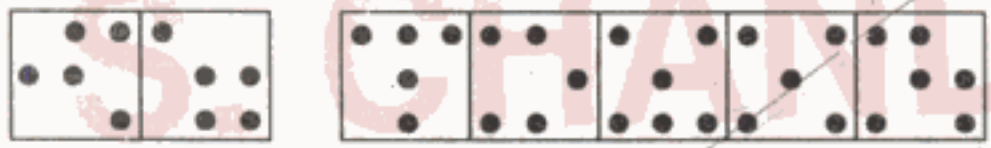
17. 
1 2 3 4 5

18. 
1 2 3 4 5

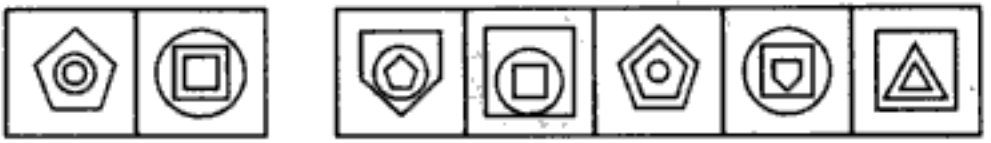
19. 
1 2 3 4 5

20. 
1 2 3 4 5

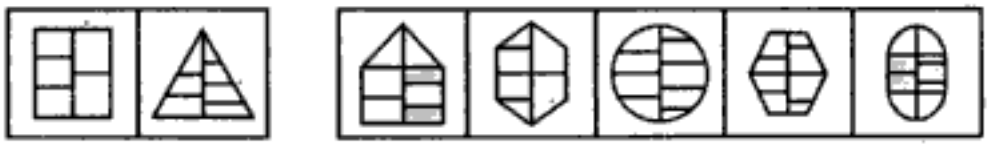
21. 
1 2 3 4 5

22. 
1 2 3 4 5

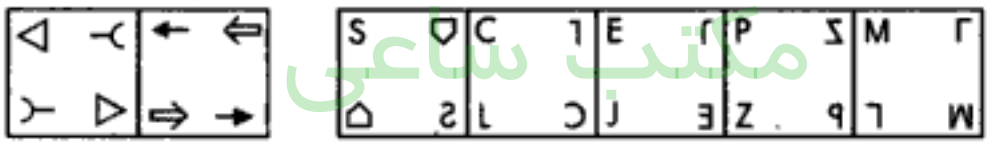
23. 
1 2 3 4 5

24. 
1 2 3 4 5 (R.B.I. 1992)

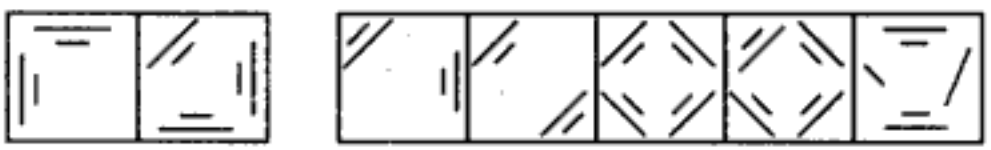
25. 
1 2 3 4 5 (Bank P.O. 1995)

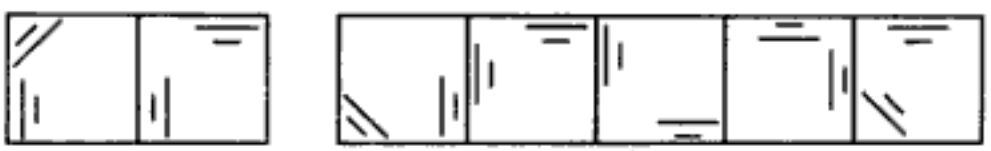
26. 
1 2 3 4 5

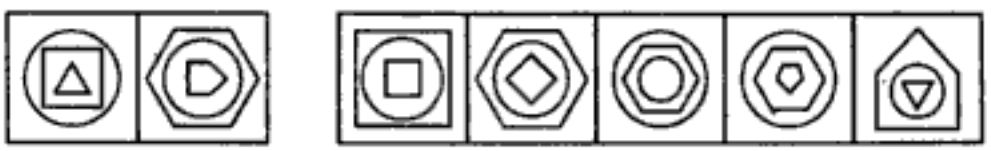
27. 
1 2 3 4 5

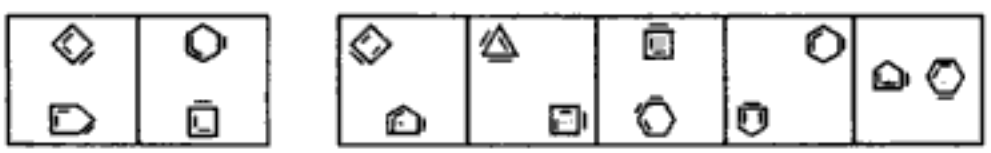
28. 
1 2 3 4 5

29. 
1 2 3 4 5 (S.B.I.P.O. 1993)

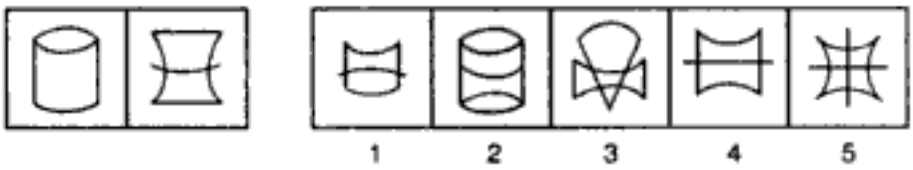
30. 
1 2 3 4 5

31. 
1 2 3 4 5 (S.B.I. P.O. 1991)

32. 
1 2 3 4 5

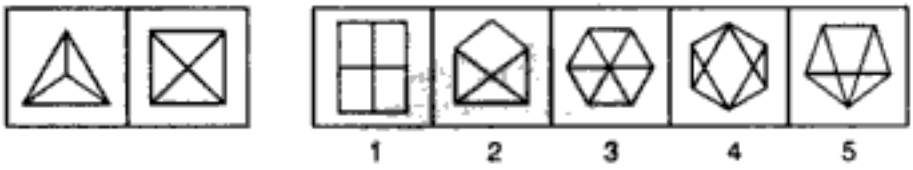
33. 
1 2 3 4 5 (Bank P.O. 1995)

34.



1 2 3 4 5

35.

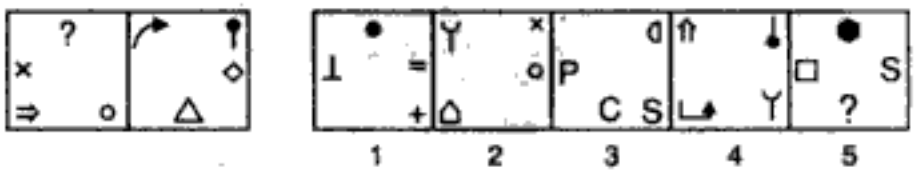


1 2 3 4 5

36.

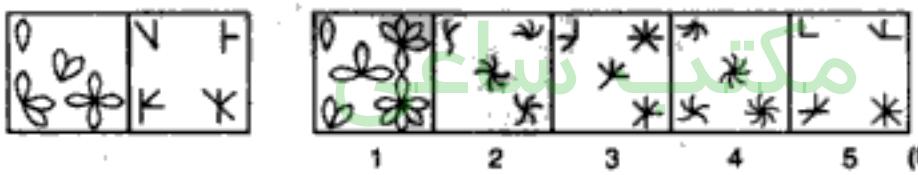
1 2 3 4 5

37.



1 2 3 4 5

38.

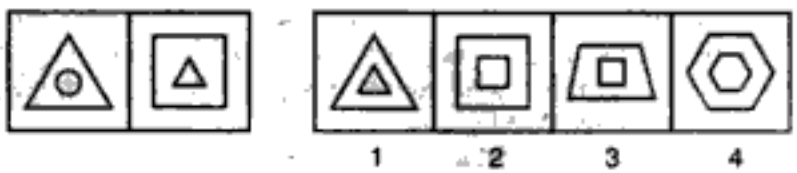


1 2 3 4 5 (Bank P.O. 1995)

39.

1 2 3 4 (I. Tax, 1993)

40.



1 2 3 4 (U.D.C. 1994)

37. (*3*) : **Each figure consists of four symbols, two at** the adjacent corners and **the other two at the mid-points of two other sides of** the square.

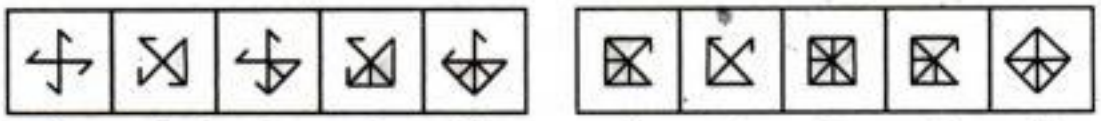
38. (*2*) : **The number** of branches in the four elements of a figure form a continuous **order i.e. 1, 2, 3, 4 in** the first problem figure; 2, 3, 4, 5 in the second and 3, 4, **5, 6 in** fig. (*2*).

39. (*4*) : **Each figure is bisected by a line in the centre.**

40. (*3*) : **The outer and the inner** figures are different.

Problem Figures **Answer Figures**

9.



A B C D E 1 2 3 4 5

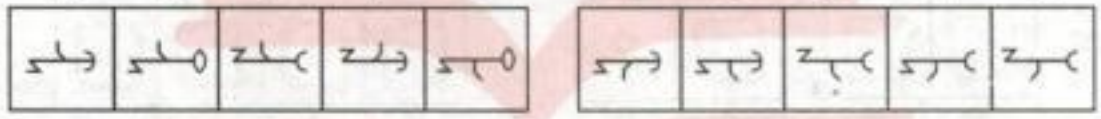
10.

A B C D E 1 2 3 4 5

11.

A B C D E 1 2 3 4 5

12.



A B C D E 1 2 3 4 5

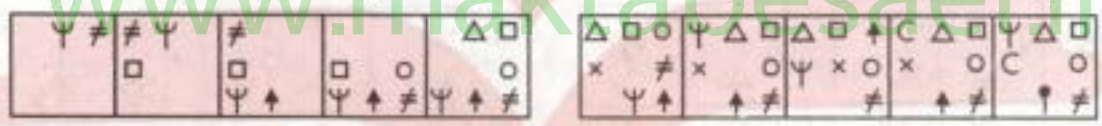
13.

A B C D E 1 2 3 4 5

14.

A B C D E 1 2 3 4 5

15.



A B C D E 1 2 3 4 5

16.

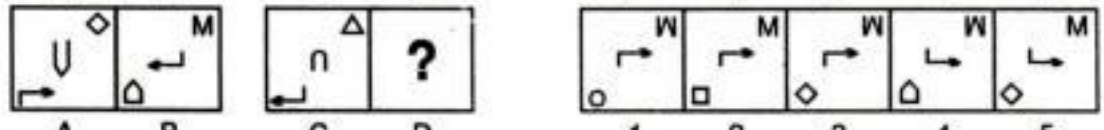
A B C D E 1 2 3 4 5

Directions : In the problem figure there is a definite relationship between figs. A & B. Establish the Similar relationship between figures in C & D from the set of answer figure.

17.

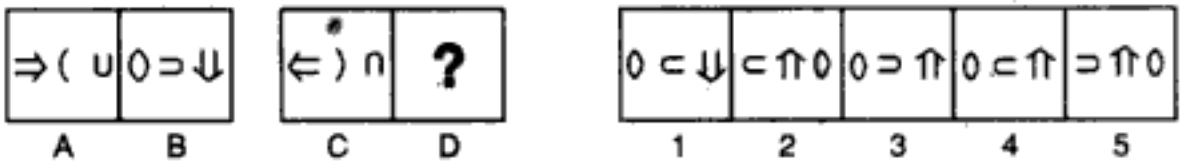
A B C D 1 2 3 4 5

18.

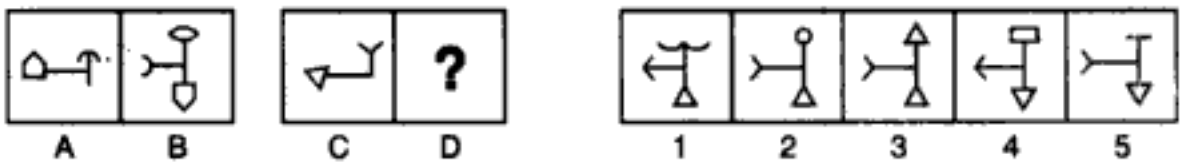


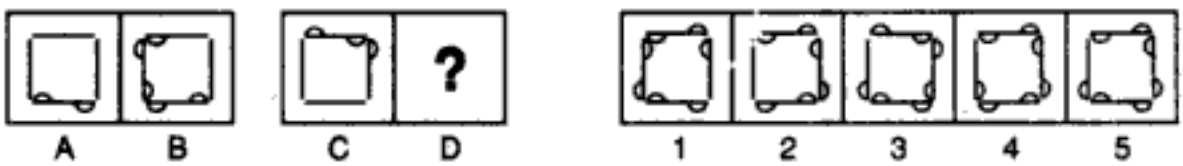
A B C D 1 2 3 4 5

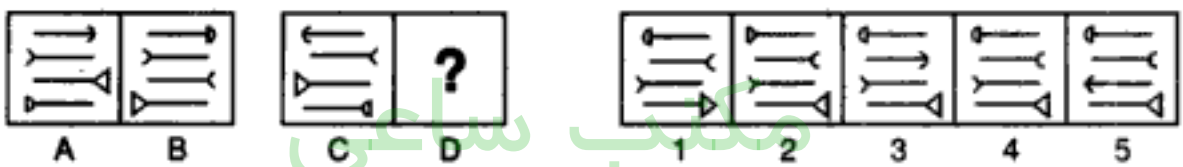
Problem Figures **Answer Figures**

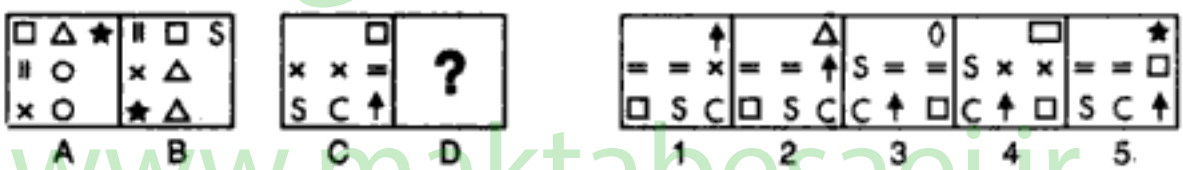
19. 

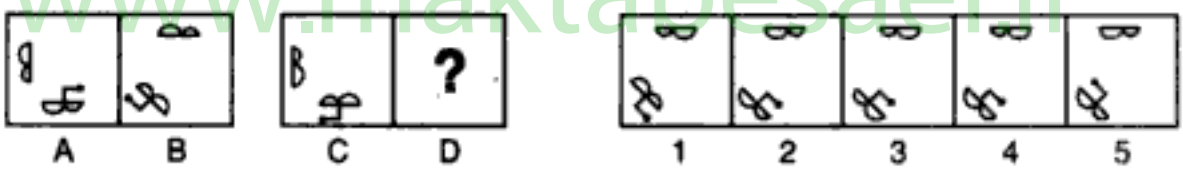
20. 

21. 

22. 

23. 

24. 

25. 

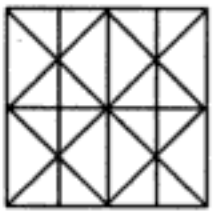
ANSWERS

1. (1)	2. (1)	3. (3)	4. (2)	5. (2)	6. (1)	7. (3)	8. (3)	9. (4)	10. (2)
11. (4)	12. (1)	13. (3)	14. (5)	15. (2)	16. (2)	17. (1)	18. (3)	19. (4)	20. (5)
21. (2)	22. (4)	23. (5)	24. (3)	25. (4)					

4. ANALYTICAL REASONING

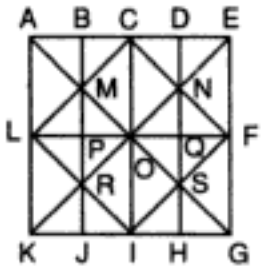
The chapter on Analytical Reasoning involves the problems relating to the counting of geometrical figures in a given complex figure. The systematic method for determining the number of any particular type of figure by the analysis of the complex figure would be clear from the examples that follow.

Ex. 1 : *What is the number of straight lines in the following figure?*



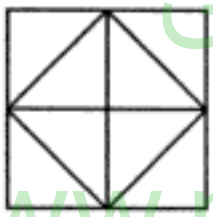
(*a*) 11 (*b*) 14
(*c*) 16 (*d*) 17

Sol. The figure is labelled as shown.



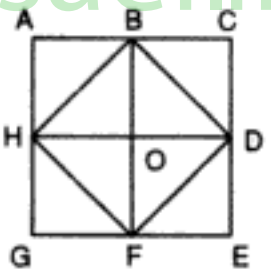
Clearly, there are 3 horizontal lines namely AE, LF and KG.
There are 5 vertical lines : AK, BJ, CI, DH and EG.
There are 6 slanting lines : LC, KE, IF, LI, AG and CF.
Thus, there are 3 + 5 + 6 = 14 straight lines in the figure.
Hence, the answer is (*b*).

Ex. 2 : *Count the number of triangles in the following figure.*



(*a*) 8 (*b*) 10
(*c*) 12 (*d*) 14

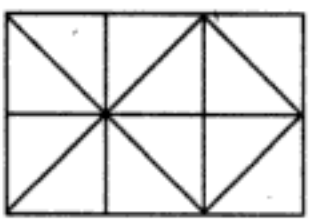
Sol. We first label the entire figure as shown.



Count the number of simplest triangles. These are ABH, BHO, BCD, BOD, DEF, DFO, FGH and FHO. Thus, there are 8 such triangles.
Next count the number of triangles which are composed of two compnents each. Such triangles are HBD, BDF, DFH and FHB. Thus, there are 4 such triangles.
Triangles with more than two components do not exist in the given figure.

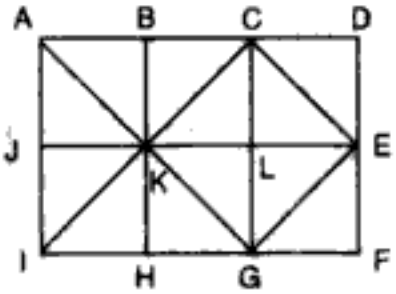
∴ The total number of triangles in the given figure = 8 + 4 = 12
Thus, (*c*) is the answer.

Ex. 3 : *How many squares does the figure have?*



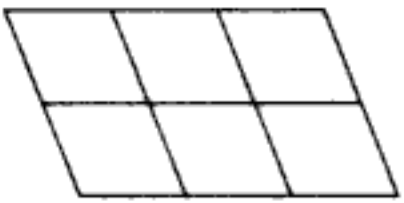
(*a*) 6 (*b*) 7
(*c*) 9 (*d*) 10

Sol. The figure may be labelled as shown :



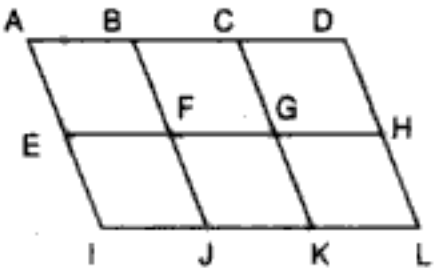
The squares composed of two components each, are ABKJ, BCLK, CDEL, LEFG, KLGH and JKHI. Thus, there are 6 such squares.
Only one square, KCEG is composed of four components.
Two squares namely, ACGI and BDFH are composed of eight components each. Thus, there are 2 such squares.
∴ There are 6 + 1 + 2 = 9 squares in the given figure.
Hence, (*c*) is the answer.

Ex. 4 : *How many parallelograms are there in the figure below ?*



(*a*) 14 (*b*) 15
(*c*) 16 (*d*) 18

Sol. We can label the figure as shown.



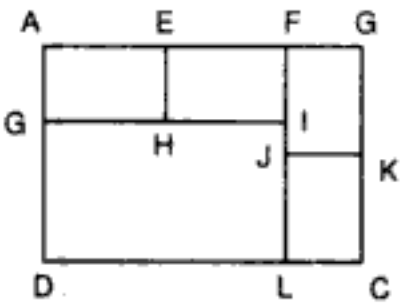
The simplest || gms are ABFE, BCGF, CDHG, EFJI, FGKJ AND GHKL. These are 6 in number.
The || gms composed of two components each, are ACGE, BDHF, EGKI, FHLJ, ABJI, BCKJ, and CDLK. Thus, there are 7 such || gms.

The || gms composed of four components each, are ACKI and BDLJ. i.e. 2 in number.
There is only one || gm composed of six components, namely, ADLI.
Thus, there are 6+7+2+1=16 parallelograms in the figure.
Hence, (c) is the answer.

Ex 5. *What is the number of rectangles in the following figure?*

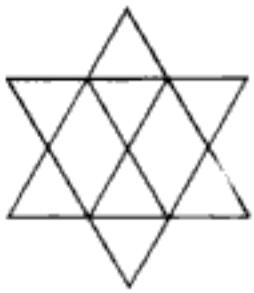
(*a*) 6 (*b*) 7
(*c*) 8 (*d*) 9

Sol. The figure is labelled as shown :



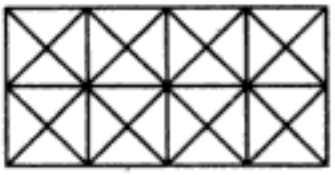
Simplest rectangles are AEHG, EFIH, FBKJ, JKCL and GILD. i.e. there are 5 such rectangles.
The rectangles composed of two components each are AFIG and FBCL. Thus, there are 2 such rectangles.
Only one rectangle, namely AFLD is composed of 3 components and only one rectangle, namely ABCD is composed of 5 components.
Thus, there are 5 + 2 + 1 + 1 = 9 rectangles in the figure
Hence, (*d*) is the answer.

Ex. 6 : *Determine the number of pentagons in the following figure :*



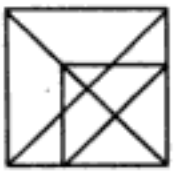
(*a*) 5 (*b*) 6
(*c*) 8 (d) 10

32. Count the number of squares in the figure given below :



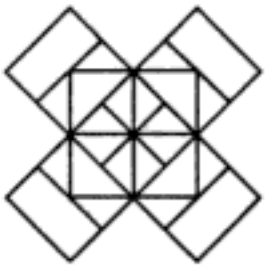
(a) 11 (b) 21
(c) 24 (d) 26

33. How many triangles are there in the figure given below?



(a) 16 (b) 18
(c) 19 (d) 20

34. How many squares does the following figure have?



(a) 22 (b) 20
(c) 18 (d) 16

Directions : ***Study the following figure and answer questions 35 to 37.***

35. What is the minimum number of straight lines that is needed to construct the figure ?

(a) 11 (b) 13 (c) 15 (d) 21

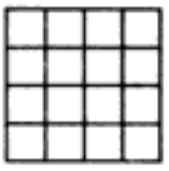
36. Count the number of triangles in the figure.

(a) 12 (b) 16 (c) 20 (d) 24

37. How many squares does the figure contain?

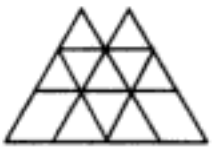
(a) 5 (b) 6 (c) 7 (d) 8

38. How many squares are there in the following figure?



(a) 16 (b) 17
(c) 25 (d) 27

39. Count the number of triangles and parallelograms in the figure given below .

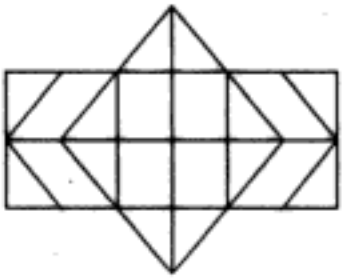


(a) 16, 22 (b) 18, 16
(c) 14, 20 (d) 15, 21

48. Count the number of pentagons in the following figure :

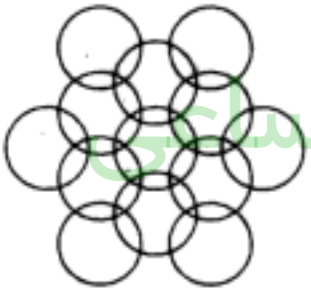
(a) 16 (b) 14
(c) 12 (d) 10

49. Determine the number of rectangles and hexagons in the following figure :



(a) 8 rectangles, 3 hexagons
(b) 15 rectangles, 3 hexagons
(c) 24 rectangles, 5 hexagons
(d) 30 rectangles, 5 hexagons

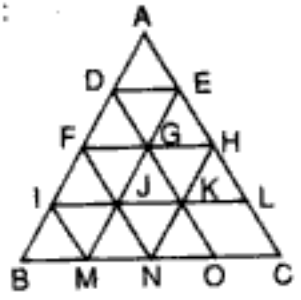
50. How many circles are there in the figure given below?



(a) 11 (b) 12
(c) 13 (d) 14

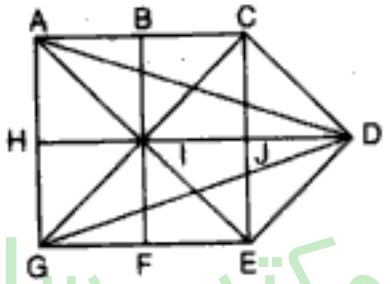
ANSWERS

1. (*b*) : The figure is labelled as shown :



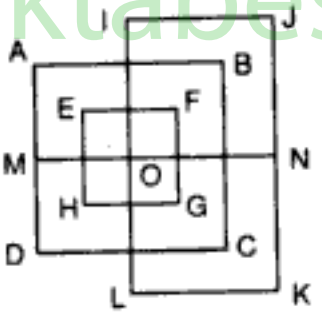
Horizontal lines are DE, FH, IL and BC i.e. 4 in number.
Slanting lines are IM, FN, DO, AC, AB, EM and HN i.e. 7 in number.
∴ Total number of lines is 4 + 7 = 11.

2. (*b*) : We can label the figure as shown :



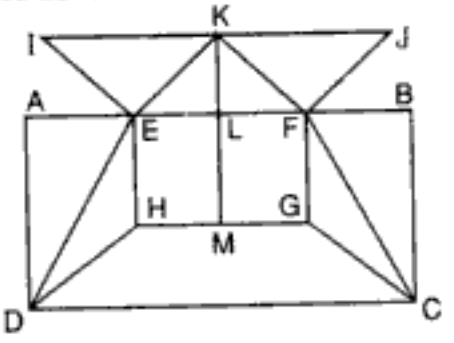
In this figure :
the horizontal lines are AC, HD and GE i.e. 3 in number ;
the vertical lines are AG, BF and CE i.e. 3 in number ;
and the slanting lines are AE, CD, AD, CG, DE and GD i.e. 6 in number.
Thus, there are 3 + 3 + 6 = 12 lines in all.

3. (*a*) : The figure may be labelled as follows :



Vertical lines are AD, EH, IL, FG, BC and JK i.e. 6.
Horizontal lines are IJ, AB, EF, MN, HG, DC, LK i.e. 7.
∴ Total number of lines is 6 + 7 = 13

4. (*b*) : The figure may be labelled as follows :



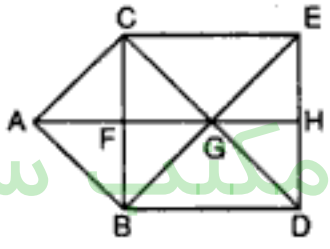
Triangles :

The simplest triangles are IJQ, JKQ, KLQ, LMQ, MNQ, NOQ, OPQ and PIQ i.e. 8 in number.
The triangles composed of two components are ABQ, BCQ, CDQ, DEQ, EFQ, FGQ, GHQ, HAQ, IKQ, KMQ, MOQ and OIQ i.e. 12 in number.
The triangles composed of four components are ACQ, CEQ, EGQ, GAQ, IKM, KMO, MOI and OIK i.e. 8 in number.
The triangles composed of eight components are ACE, CEG, EGA and GAC i.e. 4 in number.
Thus, there are 8 + 12 + 8 + 4 = 32 triangles.

Squares :

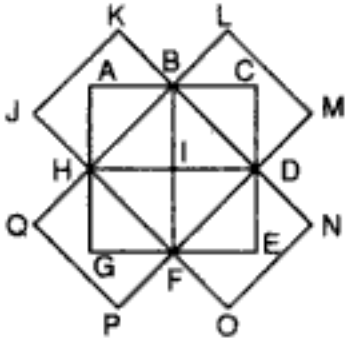
Squares composed of two components are IJQP, JKLQ, LMNQ and OPQN i.e. 4 in number.
Squares composed of four components are ABQH, BCDQ, QDEF and HQFG i.e. 4 in number.
The only square composed of eight components is IKMO.
There is only one square composed of sixteen components which is ACEG.
Hence, there are 4 + 4 + 1 + 1 = 10 squares in the figure.

8. (*c*) : We label the figure as shown :



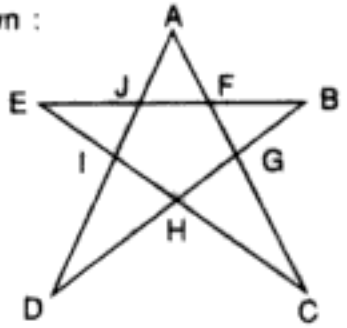
Count the number of simplest triangles. These are AFC, AFB, BGF, CGF, CGE, BGD, EHG, and DHG. Thus there are 8 such triangles.
Next, count the number of triangles which are composed of two small triangles each. These are ABC, ACG, CGB, ABG and GDE. Thus, there are 5 such triangles.
Also, count the number of triangles each of which contains three small triangles. These are BCD, CEB, EDC and EDB. Thus, there are 4 such triangles.
Consequently, there are 8 + 5 + 4 = 17 triangles in the figure.

9. (*d*) : The figure can be labelled as shown :



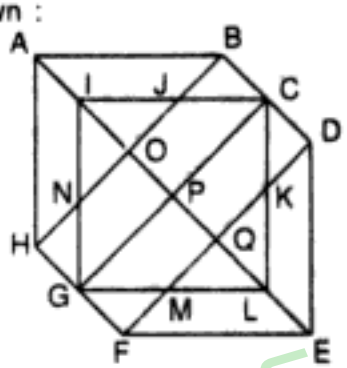
The rectangles composed of two components are JKBH, LMDB, NOFD and PQHF i.e. 4 in number.
The rectangles composed of four components are ACDH, BCEF, DEGH and FGAB i.e. 4 in number.
The rectangles composed of six components are HLMF, BNOH, PQBD and JKDF i.e. 4 in number.
The rectangles composed of eight components are JKNO and PQLM i.e. 2 in number.
Hence, the total number of rectangles in the figure = 4 + 4 + 4 + 2 = 14

10. (*d*) : The figure is labelled as shown :



The simplest triangles are AJF, BFG, CGH, DHI and EJI i.e. 5.
The triangles having three parts are AIC, ADG, EHB, EFC and DJB i.e. 5.
∴ There are 10 triangles in the figure.

11. (*c*) : The figure is labelled as shown :

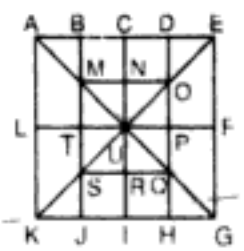


The simplest triangles are BCJ, CDK, KLQ, LMQ, FGM, GHN, NOI and IJO i.e. 8 in number.
The triangles composed of two components each are AOB, DEQ, EFQ, AOH, GIP, CIP, CLP, GLP, KLM and NIJ i.e. 10 in number.
The triangles composed of four components each are ABH, DEF, ICL, CLG, LGI and GIC i.e. 6 in number.
∴ Total number of triangles in the figure = 8 + 10 + 6 = 24.

12. (*c*) : The figure may be labelled as shown :

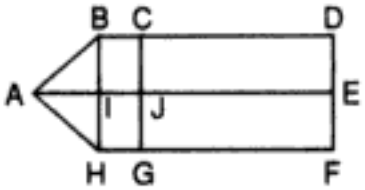
The simplest triangles are GKL, MHN, DLJ, DMJ, QRE, OPF, PIA and IRA i.e. 8.
The triangles having two components each, are BDO, CDQ, DLM, PRA, KFI, NEI, HJI, GJI, DKI and DNI i.e. 10.
The triangles having four components each, are DIE, DFI, DOA, DQA and DHI i.e. 5.
The triangles having six components each, are DCA and DBA i.e. 2.
DEF is the only triangle having eight components.
ABC is the only triangle having twelve components.
Thus, there are 8 + 10 + 5 + 2 + 1 + 1 = 27 triangles in the figure.

13. (*b*) : We label the figure as shown :



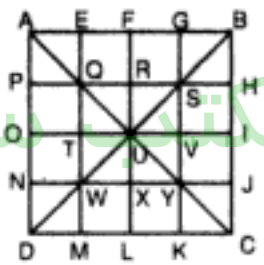
The simplest squares are BCNM, CDON, HIRQ and SRIJ i.e. 4.
The squares composed of two components are MNUT, NOPU, UPQR and TURS i.e. 4.
The squares composed of five components are CEFU, GIUF, IKLU and ACUL i.e. 4.
The squares composed of six components are BDPT and TPHJ i.e. 2.
There is only one square i.e. MOQS composed of eight components.
There is only one square i.e. AEGK composed of twenty components.
Hence, there are 4 + 4 + 4 + 2 + 1 + 1 = 16 squares in the figure.

14. (*d*) : The figure may be labelled as shown :



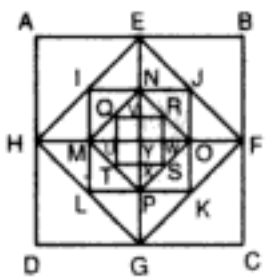
The simplest rectangles are BCJI, IJGH, CDEJ and JEFG i.e. 4.
The rectangles composed of two components are BDEI, IEFH, CDFG and BCGH i.e. 4.
The only rectangles composed of four components is BDFH.
Thus, there are 4 + 4 + 1 = 9 rectangles in the figure.

15. (*d*) : The figure may be labelled as shown :



Now, the simplest triangles are APQ, QTU, UXY, YKC, AEQ, QRU, UVY, YJC, BGS, SRU, UTW, WND, BHS, SVU, UXW and WMD i.e. 16.
The triangles having two components each, are QUS, SUY, WUY and QUY i.e. 4.
The triangles having three components each, are AFU, UIC, AOU, ULC, UOD, ULD, BFU and BIU i.e. 8.
The triangles having four components each, are QSY, SQW, SYW and QWY i.e. 4.
The triangles having six components each, are ABU, ADU, CDU and CBU i.e. 4.
The triangles having seven components each, are ANY, AGY, QMC, QHC, BJW, BEW, SKD and DPS i.e. 8.
The triangles having twelve components each are ADC, BDC, ABC and ABD i.e. 4.
Thus, there are in all 16 + 4 + 8 + 4 + 4 + 8 + 4 = 48 triangles in the figure.

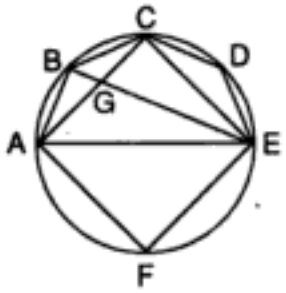
16. (*d*) : The figure may be labelled as shown :



The simplest squares are VRWY, YWSX, UYXT and QVYU i.e. 4.
The squares composed of four components are QRST, NJOY, OYPK, MYLP and INYM i.e. 5.
The squares composed of seven components are EBFY, YFCG, HYGD and AEYH i.e. 4.

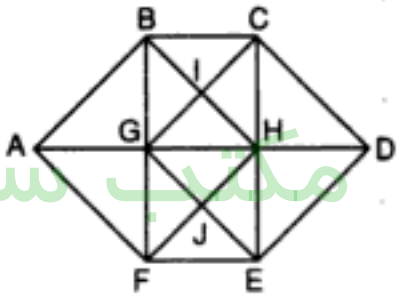
The square MNOP is composed of twelve components.
The square IJKL is composed of sixteen components.
The square EFGH is composed of twenty four components.
The square ABCD is composed of twenty eight components.
Hence, there are 4 + 5 + 4 + 1 + 1 + 1 + 1 = 17 squares in the figure.

17. (*d*) : We label the figure as shown :



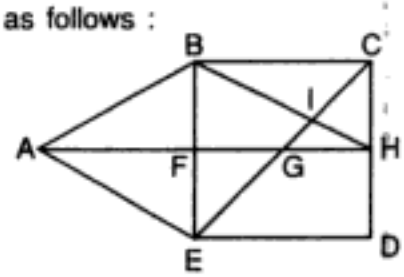
Simplest triangles are ABG, BCG, CDE,GCE, AGE and AFE i.e. 6.
Triangles composed of two triangles each, are ABC, ABE, ACE and BCE i.e. 4.
∴ There are 6 + 4 = 10 triangles in the figure.

18. (*d*) : The figure is labelled as shown :



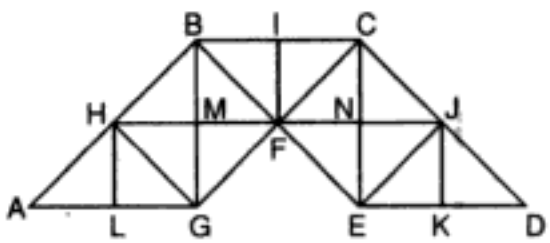
Simplest triangles are ABG, AGF, CHD, HDE, BGI, BCI, HCI, HGI, GHJ, HEJ, EFJ and GFJ i.e. 12.
The triangles composed of two triangles are ABF, CDE, BCG, BCH, HCG, BHG, GHE, HEF, GFE and GHF i.e. 10.
The triangles composed of three triangles are ABH, AFH, CDG and GDE i.e. 4.
The triangles composed of four triangles are BHF and CGE i.e. 2.
∴ Total number of triangles = 12 + 10 + 4 + 2 = 28.

19. (*d*) : The figure may be labelled as follows :



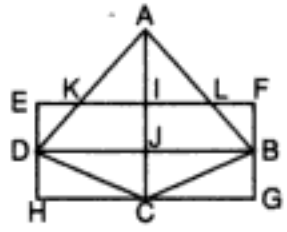
The simplest triangles are CHI, GHI, BCI, EFG, AFE and ABF i.e. 6.
The triangles composed of two components are ABE, BHF, BEI, CGH, BCH and AEG i.e. 6.
The triangles composed of three components are ABH, BCE and CED i.e. 3.
Hence, the total number of triangles in the figure = 6 + 6 + 3 = 15.

20. (*c*) : The figure may be labelled as shown.



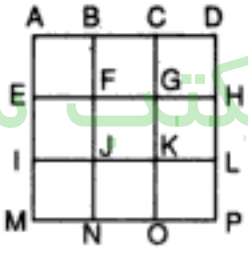
Simplest triangles are AFE, EFC, CFD, BFD and ABF i.e. 5.
Triangles having two components are AFC, CFB, ABD and BAE i.e. 4.
Triangles having three components are ADC and EBC i.e. 2.
Triangles having five components are ABC i.e. 1.
∴ Total number of triangles in the figure = 5 + 4 + 2 + 1 = 12.

24. (*c*) : The figure may be labelled as shown.



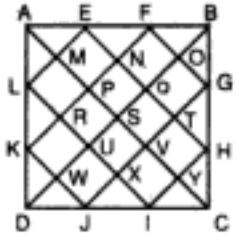
The simplest triangles are AIK, AIL, EKD, FLB, CDJ, CBJ, CDH and CBG i.e. 8.
The triangles composed of two components are ADJ, ABJ, AKL and BCD i.e. 4.
The triangles composed of three components are ADC and ACB i.e. 2.
The only triangle composed of four components is ADB.
Thus, there are 8 + 4 + 2 + 1 = 15 triangles in the figure.

25. (*a*) : The figure is labelled as shown.



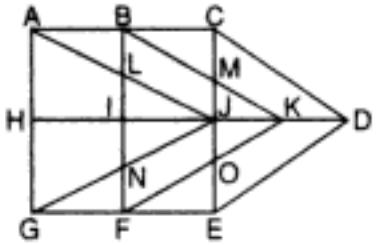
The simplest squares are ABFE, BCGF, CDHG, EFJI, FGKJ, GHLK, IJNM, JKON and KLPO i.e. 9.
The squares composed of four components are ACKI, BDLJ, EFOM and FHPN i.e. 4.
There is only one square i.e. ADPM which is composed of nine components.
Thus, there are 9 + 4 + 1 = 14 squares in the figure.

26. (*c*) : The figure is labelled as shown.



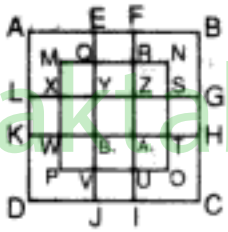
Simplest triangles in the figure are AML, LRK, KWD, DWJ, JXI, IYC, CYH, HTG, GOB, BOF, FNE and EMA i.e. 12.
Triangles having two components each, are ALE, KDJ, HIC and BFG i.e. 4.
Triangles having three components each, are APK, LUD, DUI, JVC, CVG, HQB, BQE and FPA i.e. 8.
Triangles having six components each, are ASD, DSC, BSC, BSA, AFK, LDI, JCG and BEH i.e. 8.
Triangles having twelve components each, are ADC, BDC, ABC and BAD i.e. 4.
∴ Total number of triangles in the figure = 12 + 4 + 8 + 8 + 4 = 36.

27. (*d*) : The figure may be labelled as shown.



Triangles :
Simplest triangles are ILJ, IJN, MJK, OJK, ABL, BCM, GNF and FOE i.e. 8.
Triangles composed of two components are AHJ, CJD, LJN, MOK, GHJ and EJD i.e. 6.
Triangles composed of three components are BIK and FIK i.e. 2.
Triangles composed of four components are AGJ and CDE i.e. 2.
The only triangle composed of six components is BFK.
Thus, there are 8 + 6 +2 + 2 + 1 = 19 triangles in the figure.
Parallelograms :
Simplest || gms are BLJM and FNJO i.e. 2.
The || gms. composed of two components are ABIH, HIFG, CBKD and DEFK i.e. 4.
The || gms composed of three components are ABKJ, GFKJ, BCJI and IJEF i.e. 4.
The only || gm composed of four components is ABFG.
The || gms composed of five components are ACDJ, GEDJ, ACJH and HJEG i.e. 4.
The only || gm composed of six components is BCEF.
The only || gm composed of ten components is ACEG.
Thus, there are 2 + 4 + 4 + 1 + 4 + 1 + 1 = 17 parallelograms in the figure.

28. (*d*) : The figure may be labelled as shown.

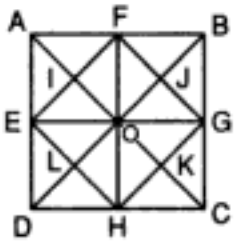


The simplest squares are EFRQ, RNSZ, QRZY, MQYX, LXWK, XYB$_1$W, YZA$_1$B$_1$, ZSTA$_1$, SGHT, A$_1$TOU, B$_1$A$_1$UV, WB$_1$VP and VUIJ i.e. 13.
The squares having two components each, are AEYL, BFZG, HA$_1$IC and KB$_1$JD i.e. 4.
The squares having four components each, are XZUP, YSOV, QNTB$_1$ and MRA$_1$W i.e. 4.
The squares having seven components each, are AFA$_1$K, EBHB$_1$, LZID and YGCJ i.e. 4.
The only square having nine components is MNOP.
ABCD is the only square having seventeen components.

29. (*d*) : The figure may be labelled as shown.

Simplest triangles are ABL, BCD, DEF, FGP, PGH, HIQ, IJQ, JKR and KLR i.e. 9.
Triangles composed of two components are OGS, SGQ, SPI, SRI, KSQ, KSM, FGH, HIJ and JKL i.e. 9.
The only triangle composed of four components is KSG.
Triangles composed of five components are CGM, INE, INA and KOC i.e. 4.
Triangles composed of six components are GMK and KOG i.e. 2.
The only triangle composed of ten components is AIE and the only triangle composed of eleven components is CKG.
∴ Total number of triangles in the figure = 9 + 9 + 1 + 4 + 2 + 1 + 1 = 27.

30. (*a*) : The figure is labelled as shown below.



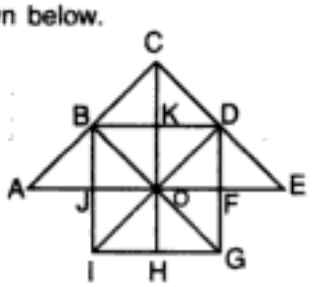
Determination of the number of triangles :

Simplest triangles are AIF, IFO, IEO, AIE, FBJ, BJG, JGO, FJO, GKC, HKC, HOK, GOK, OLH, LDH, ELD and ELO i.e. 16.
The triangles having two simple triangles each, are AFE, EDH, HCG, FBG, EOH, HOG, GOF, EOF, AEO, BOG, BOF, AOF, DOE, DOH, GOC and HOC i.e. 16.
The triangles having four simple triangles each, are AOD, DOC, COB, BOA, FEH, EGH, GFH and EFG i.e. 8.
The triangles having eight simple triangles each, are ADC, DBC, ABC and BAD i.e. 4.
∴ The number of triangles in the figure = 16 + 16 + 8 + 4 = 44.

Determination of the number of squares :

The squares containing two triangles each, are GJOK, JOIF, IOLE and LOKH i.e. 4.
The squares containing four triangles each, are BFOG, AFOE, EOHD and GOHC i.e. 4.
EFGH is the only square containing eight triangles.
ABCD is the only square containing sixteen triangles.
∴ The total number of squares in the figure = 4 + 4 + 1+ 1 = 10.

31. (*b*) : The figure is labelled as shown below.



Triangles :

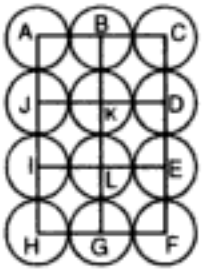
Simplest triangles are ABJ, BCK, CDK, DEF, BOJ, BOK, KOD, DOF, OFG, HOG, HIO and JOI i.e. 12.
Triangles composed of two components are BCD, ABO, ODE, BOI, BOD, DOG and GOI i.e. 7.
Triangles composed of four components are ACO, COE, DIG, BIG, BID and BDG i.e. 6.
The only triangle composed of eight components is ACE.
Thus, there are 12 + 7 + 6 + 1 = 26 triangles in the given figure.

Squares :

The squares composed of two components are KDFO, FOHG, JOHI and BKOJ i.e. 4.
The only square composed of four components is BCDO.
The only square composed of eight components is BDGI.
Thus, there are 4 + 1 + 1 = 6 squares in the figure.

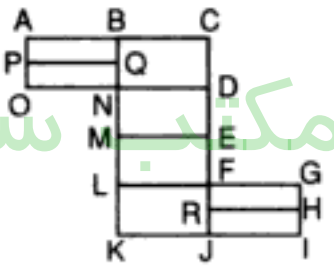
The || gms composed of four triangles each, are AGOD, EILM, DOKF, AFNE, DHJM, ENKG, NICK, HOLJ, FGIN, HOKB, NILJ and FGOH i.e. 12.
The || gms composed of six triangles each, are HICJ, HILB, DECL, ADLI, AEJH and DEJB i.e. 6.
The || gms composed of eight triangles each, are FGCK, FGKB and AGKF i.e. 3.
∴ Total number of parallelograms in the figure = 18 + 12 + 6 + 3 = 39.

43. (*c*) : The centres of all the circles are joined and all the vertices are labelled as shown :



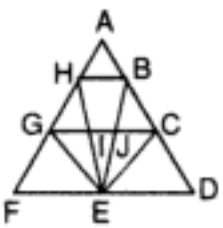
The simplest squares are ABKJ, BCDK, JKLI, KDEL, ILGH and LEFG i.e. 6.
The squares composed of four simple squares each, are ACEI & JDFH i.e. 2
Thus, in this way, 6 + 2 = 8 squares will be formed.

44. (*c*) : The figure may be labelled as shown :



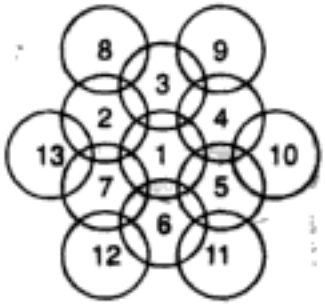
The simplest rectangles are ABQP, PQNO, BCDN, NDEM, MEFL, LFJK, FGHR and RHIJ i.e. 8.
The rectangles composed of two components each, are ABNO, BCEM, NDFL, MEJK and FGIJ i.e. 5.
The rectangles composed of three components each, are ACDO, BCFL, NDJK and LGIK i.e. 4.
The only rectangle composed of four components is BCJK.
∴ Total number of rectangles in the given figure = 8 + 5 + 4 + 1 = 18.

45. (*b*) : The figure is labelled as follows :



The simplest triangles are ABH, BJC, GHI, IJE, JCE, GIE, CDE and GEF i.e. 8.
The triangles composed of two components each, are ICE, GJE, HBE, HEG and BCE i.e. 5.
The triangles composed of three components each, are BED, HEF and GCE i.e. 3.
The only triangle composed of four components is AGC.
The only triangle composed of nine components is AFD.
Thus, there are 8 + 5 + 3 + 1 + 1 = 18 triangles in the given figure.

50. (*c*) : There are 13 circles in the given figure. This is clear from the following figure in which all the circles have been numbered from 1 to 13.



5. MIRROR-IMAGES

Mirror Image : *The image of an object, as seen in a mirror, is called its mirror reflection or mirror image.*

In such an image, the right side of the object appears on the left side and vice versa. A mirror-image is therefore said to be laterally inverted and the phenomenon is called **Lateral Inversion.**

MIRROR-IMAGES OF CAPITAL LETTERS

Letters	Mirror-Images	Letters	Mirror-Images	Letters	Mirror-Images
A	A	J	Ⴑ	S	Ƨ
B	ꓭ	K	ꓘ	T	T
C	Ɔ	L	⅃	U	U
D	ᗡ	M	M	V	V
E	Ǝ	N	И	W	W
F	ꟻ	O	O	X	X
G	Ә	P	ꟼ	Y	Y
H	H	Q	Ϙ	Z	Ƹ
I	I	R	Я	-	-

Remark : The letters having identical mirror images are :

A, H, I, M, O, T, U, V, W, X, Y

Ex. *Mirror-images of certain words are given below :*

1. MOUTH : HTUOM
2. NATIONAL : ⅃AИOITAИ
3. PROPER : ЯƎꟼOЯꟼ
4. DEFICIT : TIϽIꟻƎᗡ

MIRROR-IMAGES OF SMALL LETTERS

Letters	Mirror-Images	Letters	Mirror-Images	Letters	Mirror-Images
a	ɒ	j	ᒑ	s	ƨ
b	d	k	ʞ	t	ƚ
c	ɔ	l	l	u	ʋ
d	b	m	m	v	v
e	ɘ	n	n	w	w
f	ɟ	o	o	x	x
g	ϱ	p	q	y	γ
h	ɥ	q	p	z	ꙅ
i	i	r	ɿ	-	-

MIRROR-IMAGES OF NUMBERS

Numbers	Mirror-Images	Numbers	Mirror-Images	Numbers	Mirror-Images
1	Ɩ	4	ᔭ	7	Ꞁ
2	Ƨ	5	Ƽ	8	8
3	Ɛ	6	მ	9	e

EXERCISE 5A

Directions : *In each one of the following questions, you are given a combination of letters or | and numbers followed by four alternatives (a), (b), (c) and (d). Choose the alternative which most closely resembles the mirror-image of the given combination.*

1. STROKE
   (a) ƧTRΟKƎ (b) EKORTS
   (c) ROKETS (d) ƎKORTS
2. LATERAL
   (a) ⅂ARƎTA⅂ (b) ⅃ARƎTA⅃
   (c) LARETAL (d) ⅃ARƎTAL
3. QUALITY
   (a) ϘUΛ⅂I⅂Y (b) YTILAUQ
   (c) YTI⅃AUϘ (d) YTI⅃AUϘ
4. WESTERN
   (a) NЯƎTSƎW (b) NЯƎTSƎW
   (c) NЯƎTSƎW (d) NЯƎTSƎW
5. BUZZER
   (a) ЯƎZZUB (b) REZZUB
   (c) BUZZƎЯ (d) ЯƎZZUB
6. FIXING
   (a) GNIXIF (b) ƃNIXIF
   (c) ƃNIXIF (d) ƃNIXIF
7. CHEAPER
   (a) ЯƎPAƎHC (b) ЯƎPAƎHC
   (c) ЯƎPAƎHC (d) ЯƎPAƎHC
8. JUDGEMENT
   (a) TNEMEGDUJ (b) TNƎMƎGDU⅃
   (c) TNƎMƎGDU⅃ (d) ⅃UDGƎMƎNT
9. QUANTITATIVE
   (a) ϘUΛNTI⅂ΛTIVƎ (b) EVITATITNAUQ
   (c) ϘUANTITATIVƎ (d) ƎVITATITNAUϘ
10. REASONING
    (a) ЯƎΛSONING (b) ƃNINOSAƎЯ
    (c) GNINOSAER (d) ЯƎASONING

11. TERMINATE
(a) TERMINATE (b) ETANIMRET
(c) ETANIMRET (d) ETANIMRET

12. EFFECTIVE
(a) EVITCEFFE (b) EVITCEFFE
(c) EVITCEFFE (d) EVITCEFFE

13. COLONIAL
(a) LAINOLOC (b) LAINOLOC
(c) LAINOLOC (d) LAINOLOC

14. EMANATE
(a) EMANATE (b) ETANAME
(c) ETANAME (d) EATEMAN

15. INFORMATIONS
(a) INFORMATIONS (b) SNOITAMROFNI
(c) SNOITAMROFNI (d) SNOITAMROFNI

16. R4E3N2U
(a) R4E3N2U (b) U2N3E4R
(c) U2N3E4R (d) U2N3E4R

17. BR4AQ16HI
(a) IH61QA4RB (b) IH61QA4RB
(c) IH61QA4RB (d) IH61QA4RB

18. DBV8476
(a) DBV8476 (b) 6748VBD
(c) 8476DBV (d) DBV8476

19. 15UP5062
(a) 5062UP15 (b) 26O5PU51
(c) 26O5PU51 (d) 26O5PU51

20. DL3N469F
(a) F964N3LD (b) FL3N469F
(c) F469N3DL (d) FL3N469F

21. T3S4P5H6
(a) 6H5P4S3T (b) H6P5S4T3
(c) 9H5P4S3T (d) H6P5S4T3

22. KALINGA261B
(a) KALINGA261B (b) B162AGNILAK
(c) B261KALINGA (d) B162AGNILAK

35. NiCaRaGuA

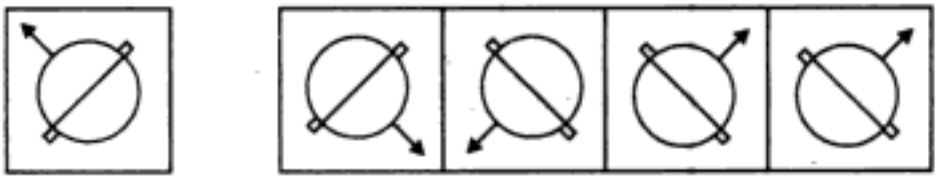
(*a*) AuGaRaCiN (*b*) AnƏɒЯɒƆiИ

(*c*) AnƏɒЯɒƆiИ (*d*) AuƏɒЯɒƆiИ

ANSWERS *(EXERCISE–1A)*

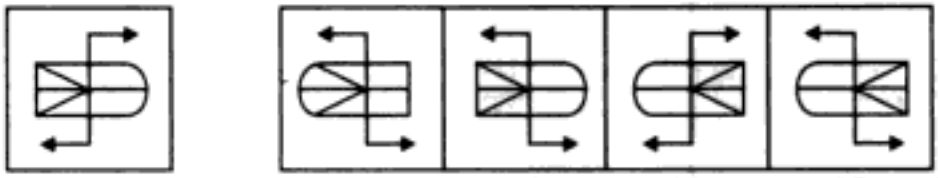
1. (d)	**2.** (b)	**3.** (c)	**4.** (d)	**5.** (a)	**6.** (b)	**7.** (c)	**8.** (c)	**9.** (d)	**10.** (b)
11. (c)	**12.** (a)	**13.** (d)	**14.** (b)	**15.** (d)	**16.** (c)	**17.** (a)	**18.** (d)	**19.** (c)	**20.** (b)
21. (d)	**22.** (d)	**23.** (a)	**24.** (c)	**25.** (d)	**26.** (b)	**27.** (c)	**28.** (b)	**29.** (d)	**30.** (a)
31. (d)	**32.** (a)	**33.** (c)	**34.** (b)	**35.** (d)					

8.



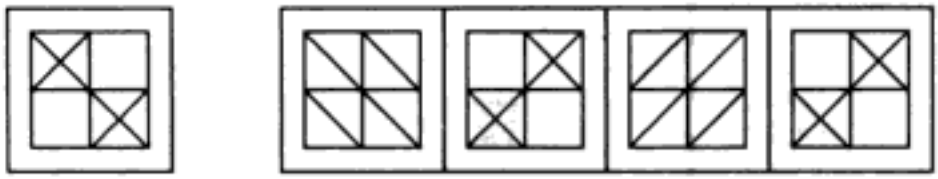
(x) (a) (b) (c) (d)

9.



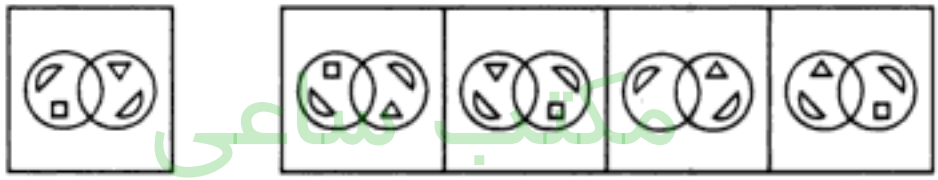
(x) (a) (b) (c) (d) (C.B.I. 1995)

10.



(x) (a) (b) (c) (d)

11.

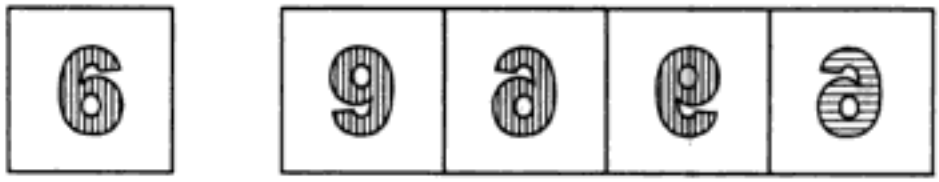


(x) (a) (b) (c) (d)

12.

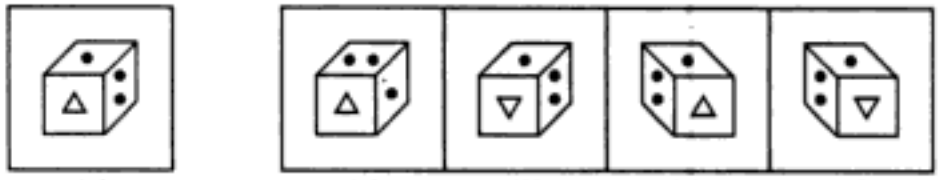
(x) (a) (b) (c) (d)

13.



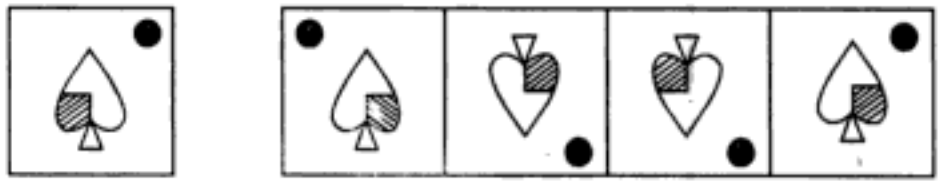
(x) (a) (b) (c) (d)

14.

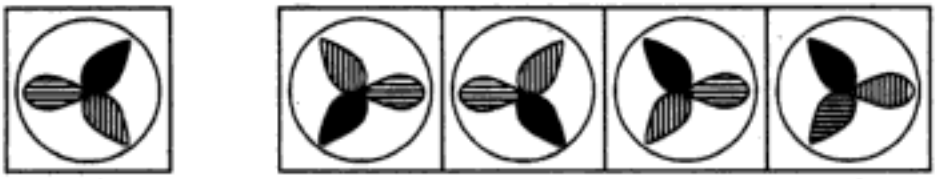


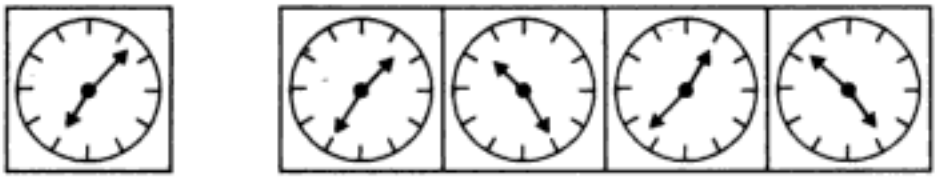
(x) (a) (b) (c) (d)

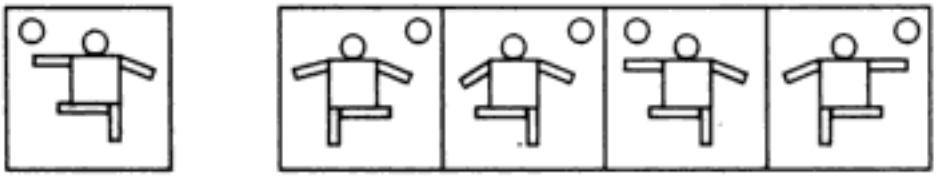
15.

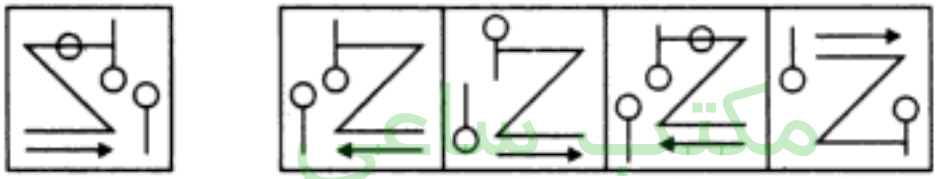


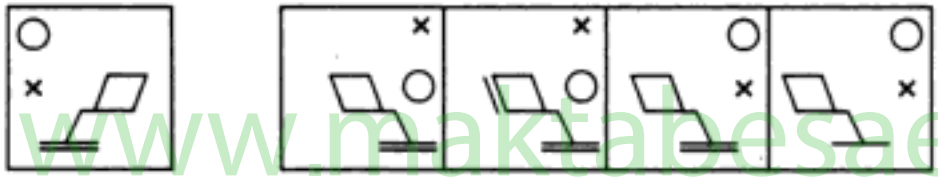
(x) (a) (b) (c) (d)

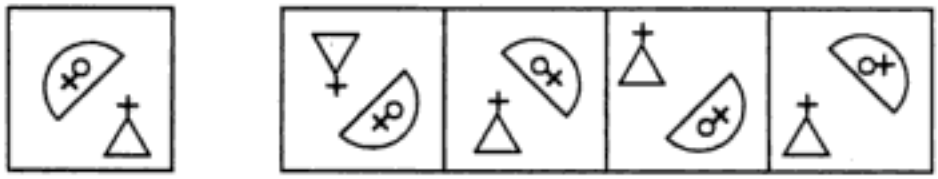
16. 
(x) (a) (b) (c) (d)

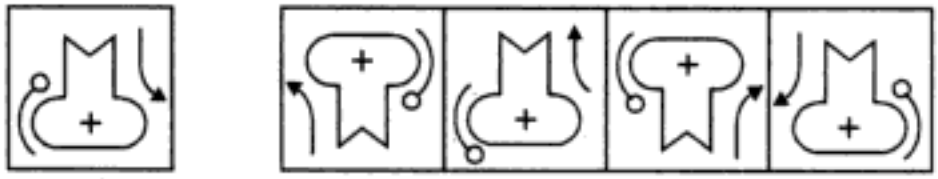
17. 
(x) (a) (b) (c) (d)

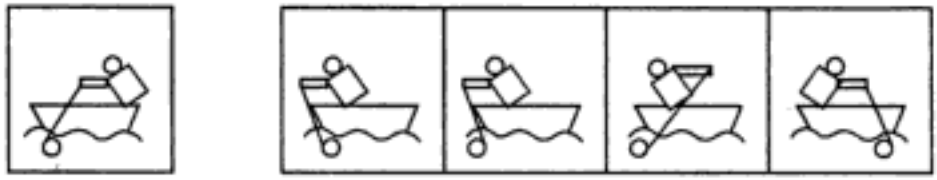
18. 
(x) (a) (b) (c) (d)

19. 
(x) (a) (b) (c) (d)

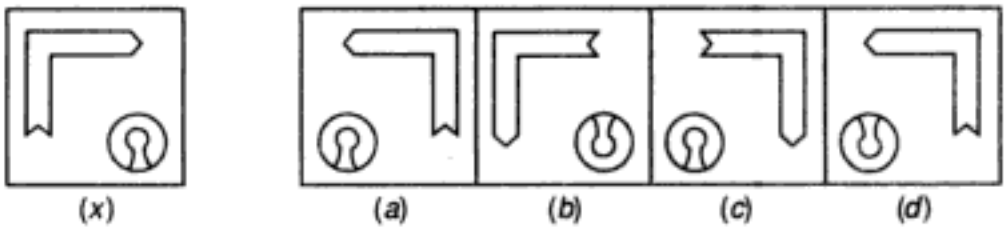
20. 
(x) (a) (b) (c) (d)

21. 
(x) (a) (b) (c) (d)

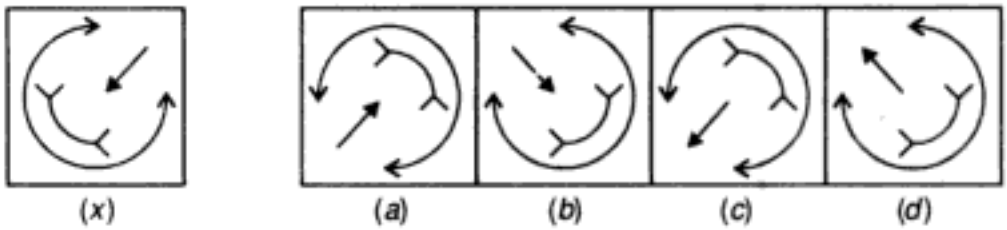
22. 
(x) (a) (b) (c) (d)

23. 
(x) (a) (b) (c) (d)

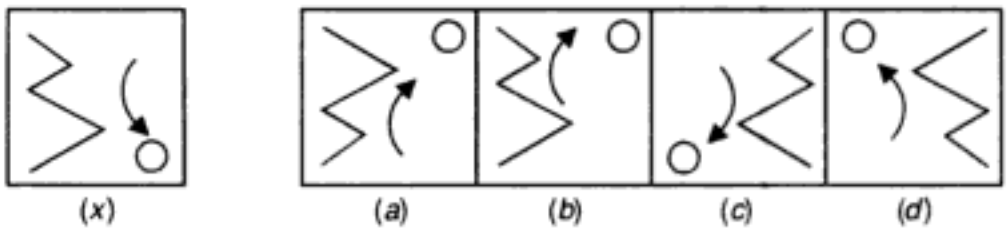
24.



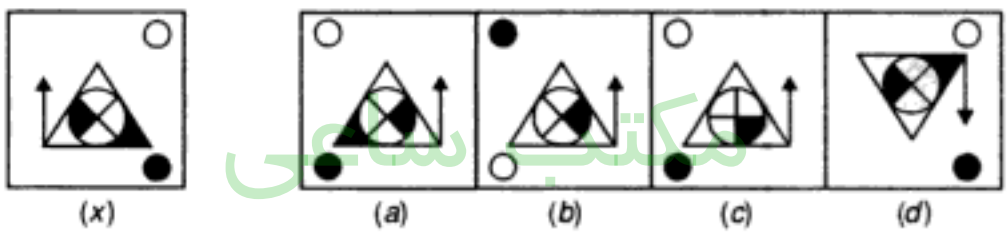
25.



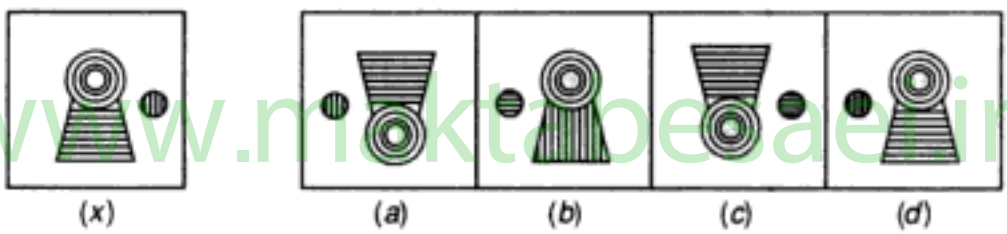
26.



27.

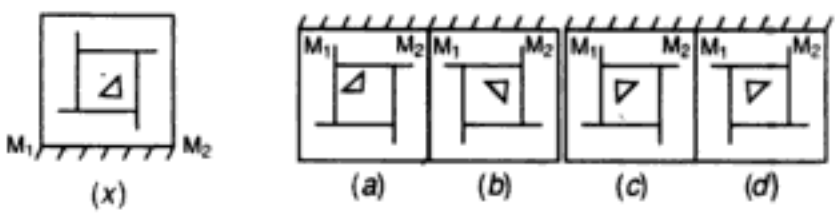


28.



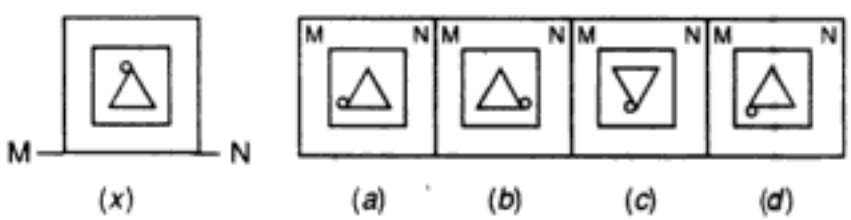
Directions : ***In each of the questions from 29 to 32, which is the mirror image of the given figure when the mirror is placed along the line shown in each one of the figures.***

29.



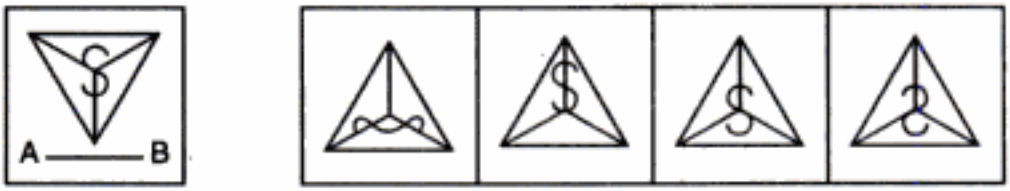
(U.D.C. 1995)

30.



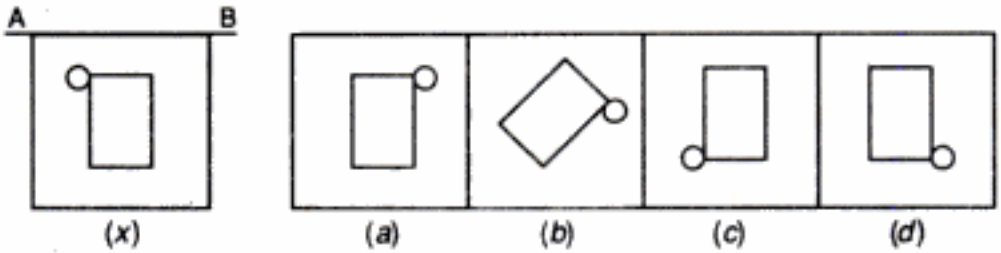
(U.D.C. 1995)

31.



(C.B.I. 1995)

32.



(Asstt. Grade, 1993)

ANSWERS

1. (c)	**2.** (a)	**3.** (d)	**4.** (b)	**5.** (a)	**6.** (d)	**7.** (c)	**8.** (c)	**9.** (d)	**10.** (d)
11. (b)	**12.** (d)	**13.** (b)	**14.** (c)	**15.** (a)	**16.** (c)	**17.** (d)	**18.** (d)	**19.** (c)	**20.** (c)
21. (b)	**22.** (d)	**23.** (d)	**24.** (a)	**25.** (b)	**26.** (c)	**27.** (a)	**28.** (d)	**29.** (b)	**30.** (c)
31. (d)	**32.** (c)								

6. WATER-IMAGES

Water Image : *The reflection of an object as seen in water is called its water image. It is the inverted image obtained by turning the object upside down.*

WATER-IMAGES OF CAPITAL LETTERS

Letters	A	B	C	D	E	F	G	H	I
Water-Images	∀	B	C	D	E	Ⅎ	⅁	H	I
Letters	J	K	L	M	N	O	P	Q	R
Water-Images	ſ	K	Γ	W	И	O	b	Ꝺ	ᴚ
Letters	S	T	U	V	W	X	Y	Z	--
Water-Images	Ƨ	⊥	∩	Λ	M	X	⅄	Σ	--

Remark 1 : The letters whose water-images remain unchanged are :

C, D, E, H, I, K, O and X.

Remark 2 : Certain words which have identical water-images are :

KICK, KID, CHIDE, HIKE, CODE, CHICK

WATER-IMAGES OF SMALL LETTERS

Letters	a	b	c	d	e	f	g	h	i
Water-Images	ɐ	p	c	q	ɘ	ɟ	ə	ɥ	¡
Letters	j	k	l	m	n	o	p	q	r
Water-Images	ɾ	ʞ	l	ɯ	u	o	b	d	ɹ
Letters	s	t	u	v	w	x	y	z	--
Water-Images	ƨ	ʇ	n	ʌ	ʍ	x	ʎ	ƨ	--

WATER-IMAGES OF NUMBERS

Letters	0	1	2	3	4	5	6	7	8	9
Water-Images	0	⇂	Ƨ	3	ᔭ	ϛ	ə	ㄥ	8	6

EXERCISE 6A

Directions : *In each one of the following questions, you are given a combination of letters or / and numbers followed by four alternatives (a), (b), (c), (d). Choose the alternative which most closely resembles the water-image of the given combination.*

1. DISC
   (*a*) CSID (*b*) ƆƧIᗡ
   (*c*) DIƧC (*d*) DISC

2. TRAY
   (*a*) ꓕᗺ∀⅄ (*b*) YART
   (*c*) ⅄∀ꓤꓕ (*d*) ꓕꓤ∀⅄

14. BK50RP62

15. 5DOB6V2

16. 96FSH52

17. 50JA32DEO6

18. RAJ589D8

19. GR98AP76ES

20. US91Q4M5W3

21. monday

22. rise

23. wrote

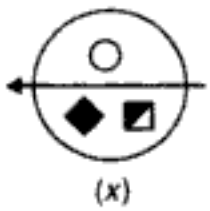
24. bridge

25. national

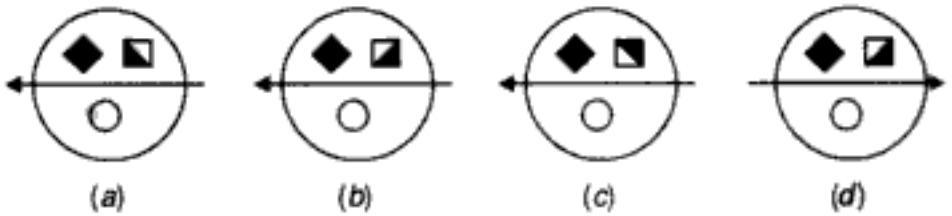
EXERCISE 6B

Directions : *In each one of the following questions, choose the correct water-image of the figure (x) from amongst the four alternatives (a), (b), (c), (d) given along with it.*

1.

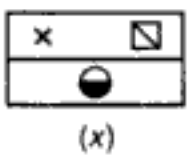


(x)



(a) (b) (c) (d)

2.



(x)

(a) (b) (c) (d)

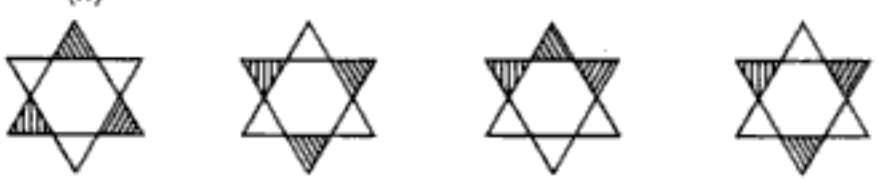
3.

(x)

(a) (b) (c) (d)

4.

(x)



(a) (b) (c) (d)

15.

(x)

(a)

(b)

(c)

(d)

16.

(x)

(a)

(b)

(c)

(d)

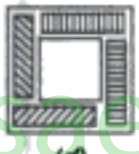
17.

(x)

(a)

(b)

(c)



(d)

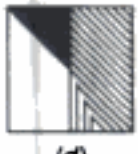
18.

(x)

(a)

(b)

(c)



(d)

19.

(x)

(a)

(b)

(c)

(d)

20.

(x)

(a)

(b)

(c)

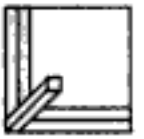
(d)

21.

(x)

(a)

(b)



(c)

(d)

22.

(x)

(a)

(b)

(c)

(d)

23.

(x)

(a)

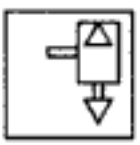
(b)

(c)

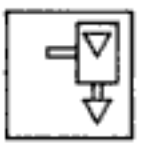
(d)

24.

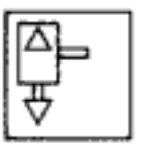
(x)



(a)



(b)



(c)

(d)

25.

(x)

(a)

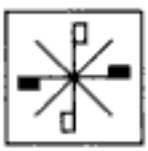
(b)

(c)

(d)

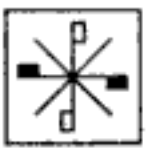
26.

(x)



(a)

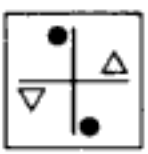
(b)



(c)

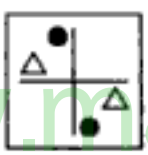
(d)

27.

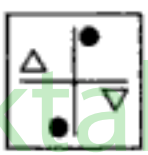


(x)

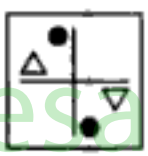
(a)



(b)



(c)



(d)

ANSWERS

1. (a)	2. (c)	3. (d)	4. (d)	5. (b)	6. (b)	7. (a)	8. (d)	9. (c)	10. (b)
11. (a)	12. (d)	13. (b)	14. (c)	15. (d)	16. (b)	17. (d)	18. (c)	19. (d)	20. (a)
21. (c)	22. (b)	23. (c)	24. (a)	25. (d)	26. (b)	27. (c)			

7. SPOTTING OUT THE EMBEDDED FIGURE

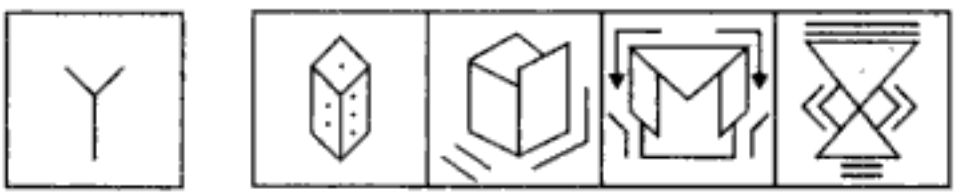
Embedded Figure : A figure X is said to be embedded in a figure Y, if Y contains figure X as its part.

TYPE 1 : In such type of problems, a figugre (X) is given, followed by four complex figures in such a way that fig. (X) is embedded in one of the them. One has to choose

Solved Examples

Directions : Fig. (X) is embedded in any one of the four alternative figures. Find the alternative which contains fig. (X).

Ex. 1.

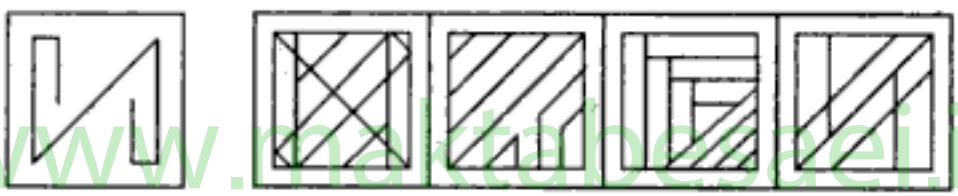


(X) (a) (b) (c) (d)

Sol. : On close observation we find that fig. (X) is embedded in fig. (a). This will be more clear from the following figure :

Hence, the answer is (a).

Ex. 2.

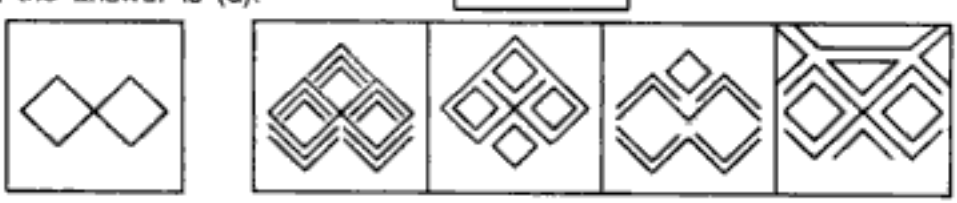


(X) (a) (b) (c) (d)

Sol. : Fig. (X) can be traced out in fig. (d) as shown below :

Hence, the answer is (d).

Ex. 3.

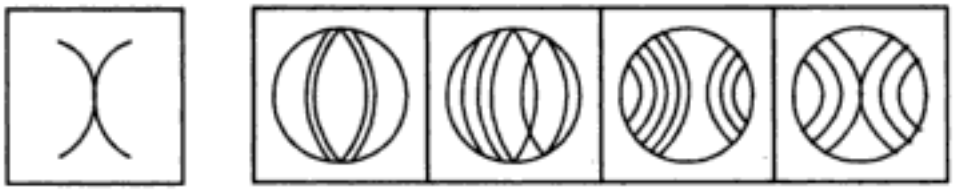


(X) (a) (b) (c) (d)

Sol. : Fig. (X) is embedded in fig. (a) as shown below :

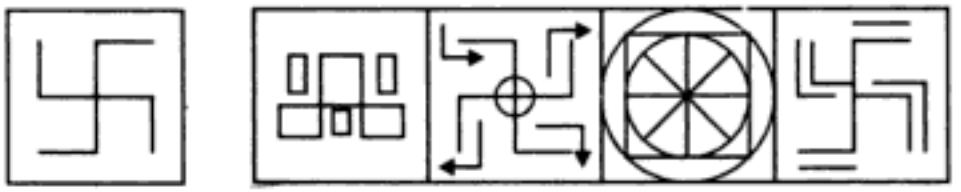
Hence, fig. (a) is the correct answer.

5.



(X) (a) (b) (c) (d)

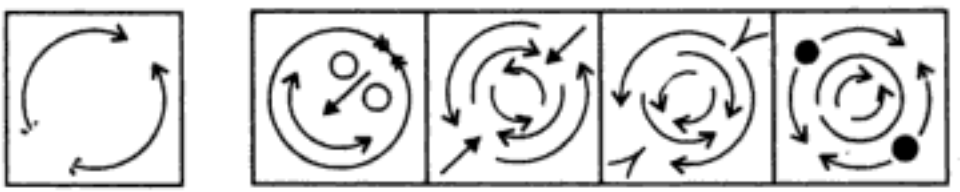
6.



(X) (a) (b) (c) (d)

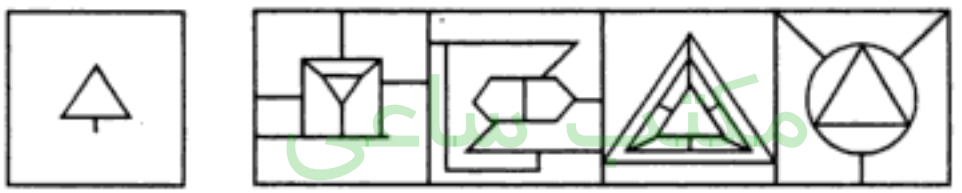
(I. Tax 1994)

7.



(X) (a) (b) (c) (d)

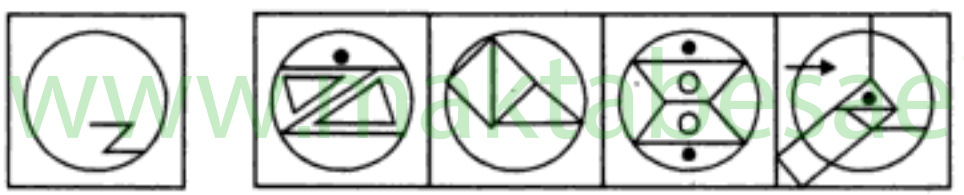
8.



(X) (a) (b) (c) (d)

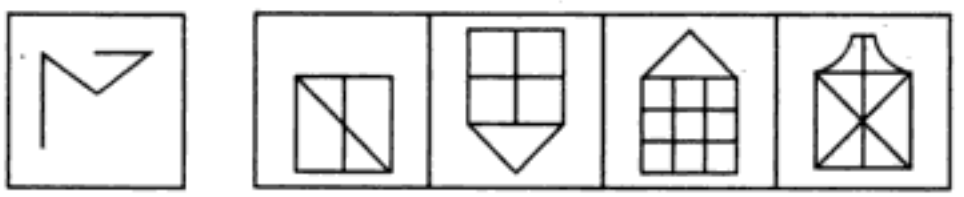
(Asstt. Grade, 1996)

9.



(X) (a) (b) (c) (d)

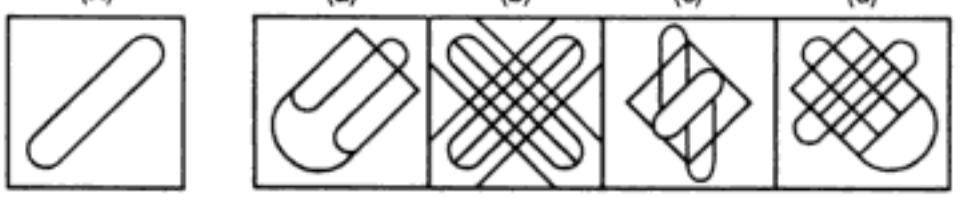
10.



(X) (a) (b) (c) (d)

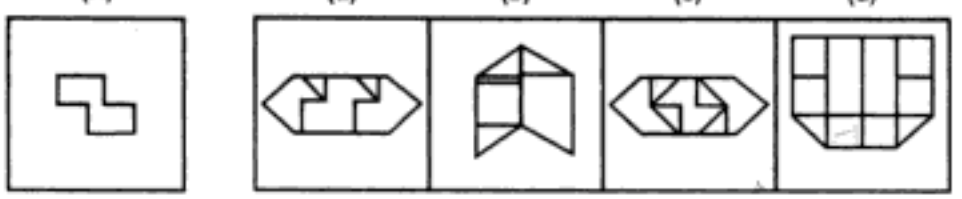
(S.S.C. 1995)

11.



(X) (a) (b) (c) (d)

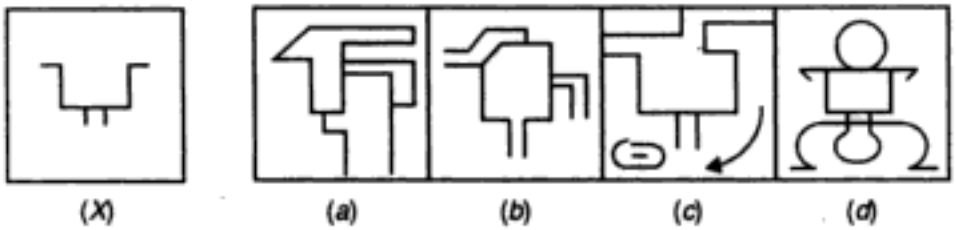
12.



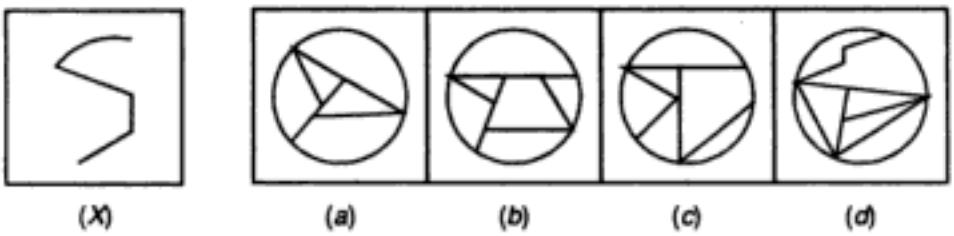
(X) (a) (b) (c) (d)

(C.B.I. 1993)

13.

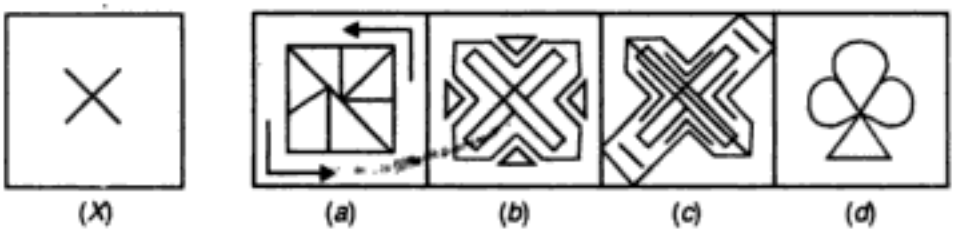


14.

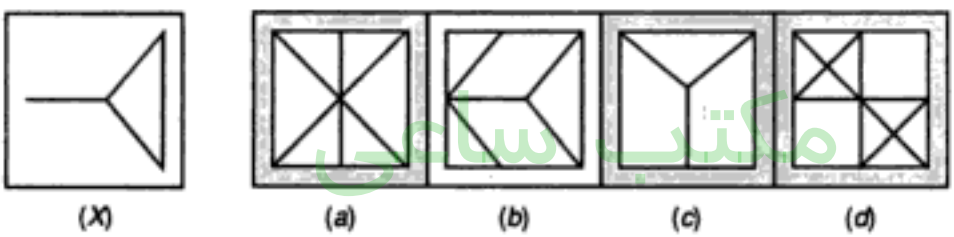


(U.D.C. 1995)

15.

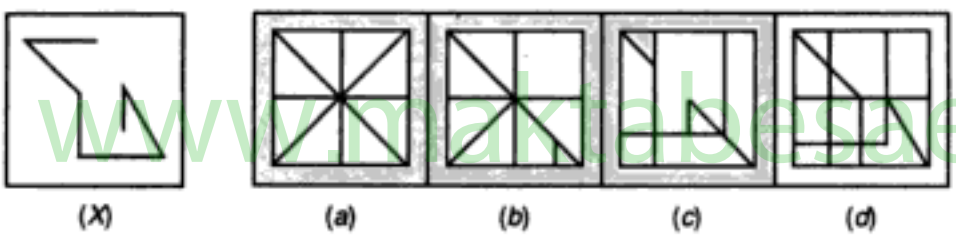


16.

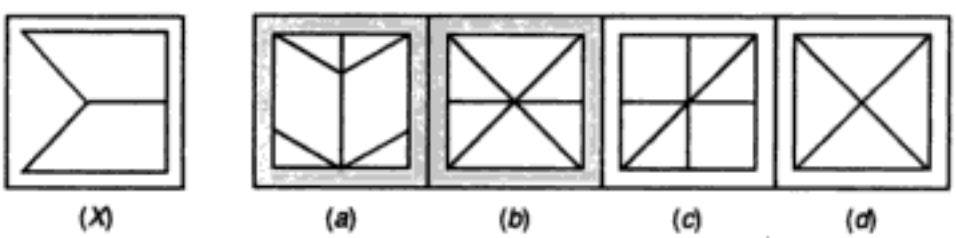


(Railways, 1993)

17.

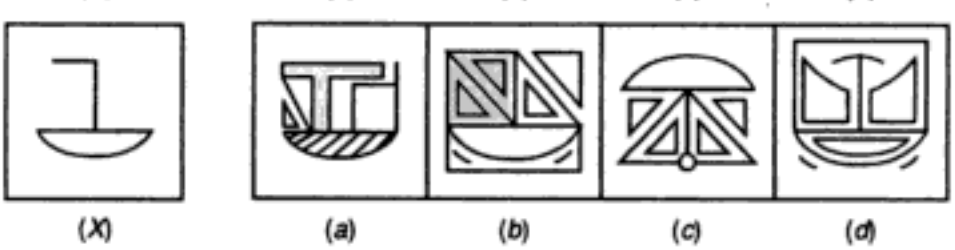


18.

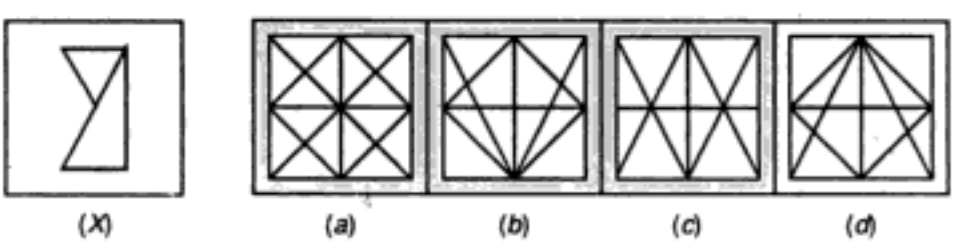


(S.S.C. 1994)

19.

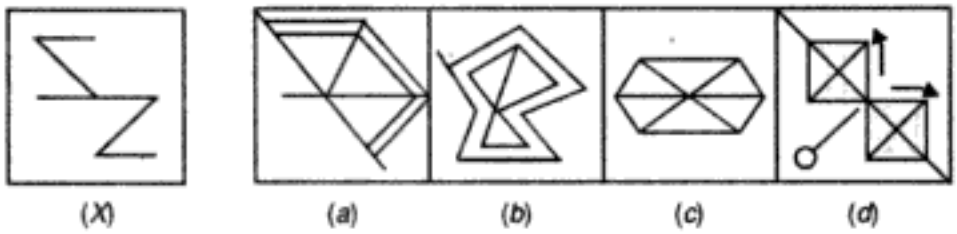


20.



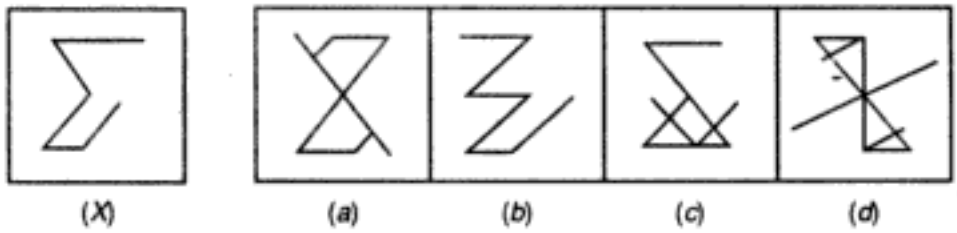
(O.B.I. 1994)

21.



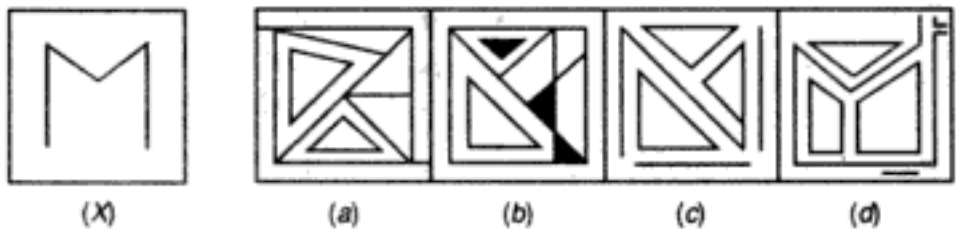
(X) (a) (b) (c) (d)

22.



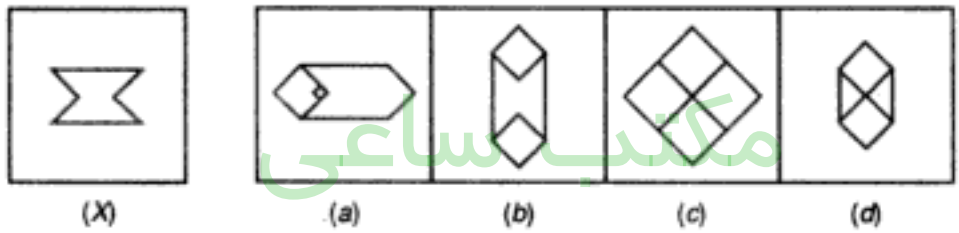
(X) (a) (b) (c) (d)

23.



(X) (a) (b) (c) (d)

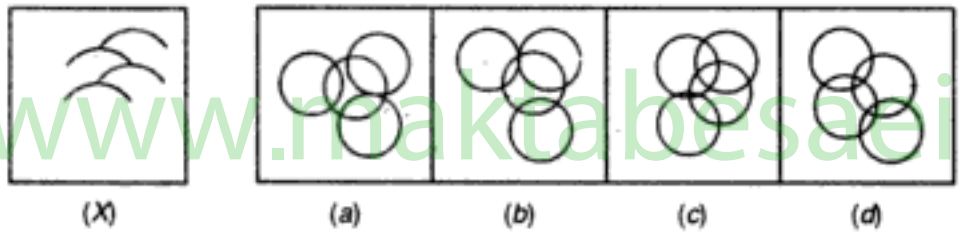
24.



(X) (a) (b) (c) (d)

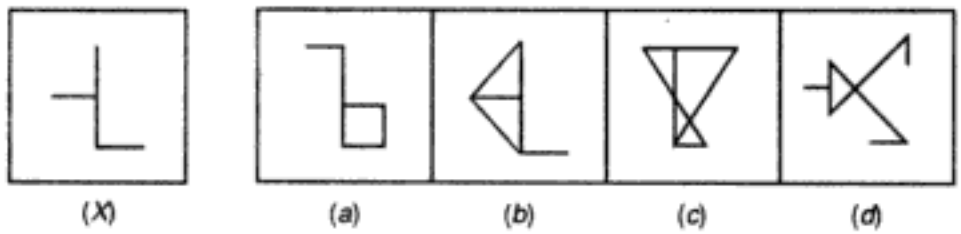
(I. Tax, 1993)

25.



(X) (a) (b) (c) (d)

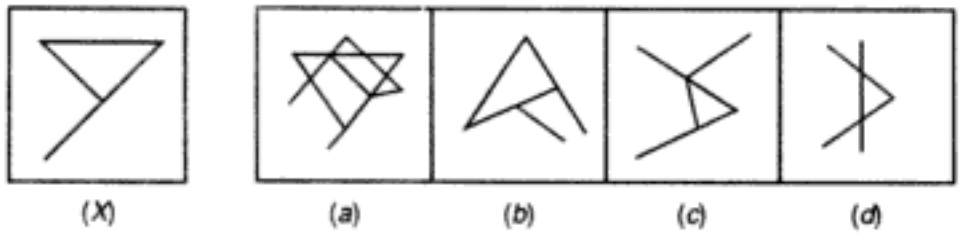
26.



(X) (a) (b) (c) (d)

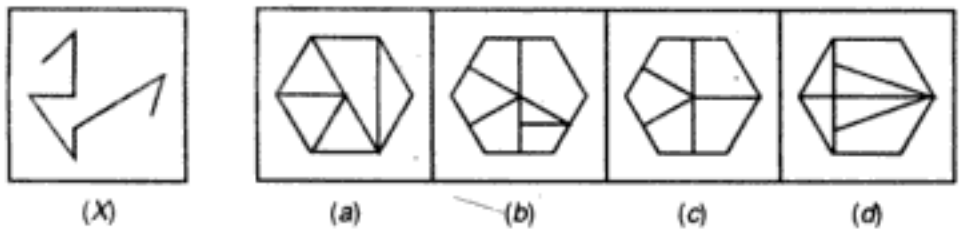
(Railways, 1993)

27.



(X) (a) (b) (c) (d)

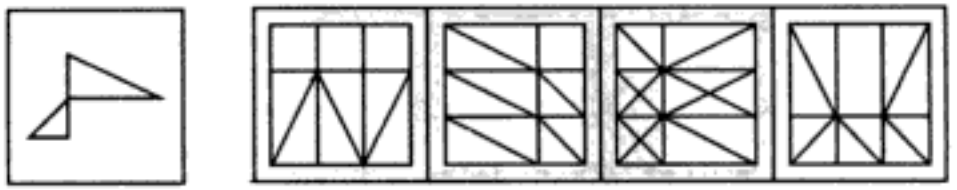
28.



(X) (a) (b) (c) (d)

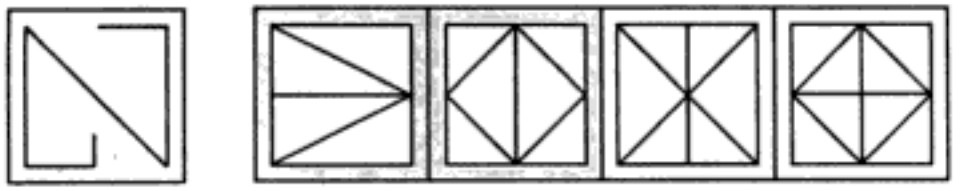
(U.D.C. 1995)

29.



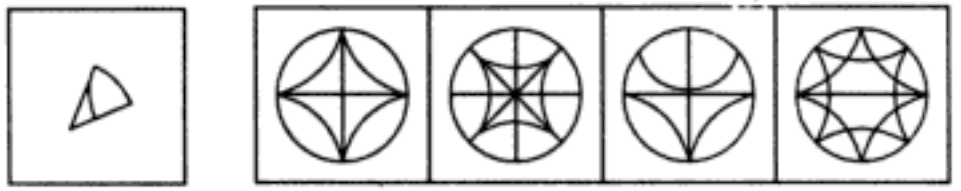
(X) (a) (b) (c) (d)

30.



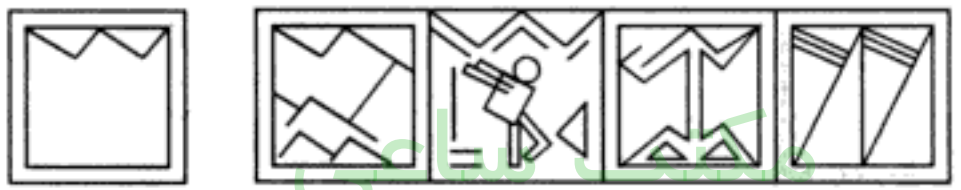
(X) (a) (b) (c) (d)

31.



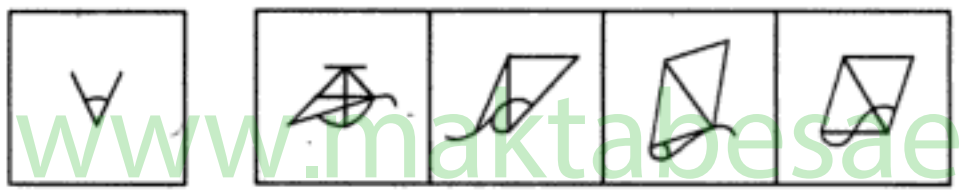
(X) (a) (b) (c) (d) **(Central Excise, 1994)**

32.



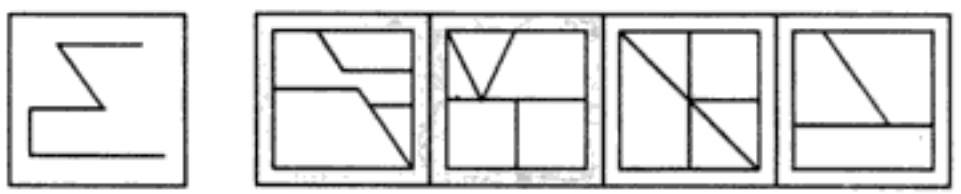
(X) (a) (b) (c) (d)

33.



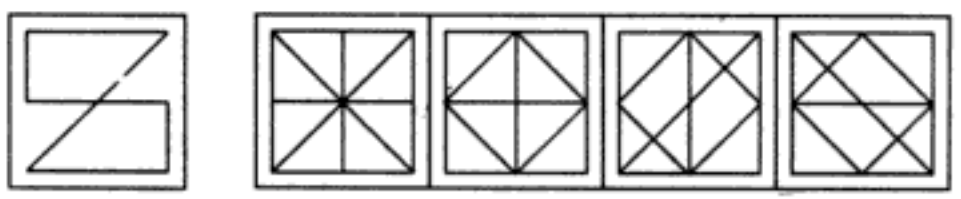
(X) (a) (b) (c) (d) **(Assistant Grade, 1995)**

34.



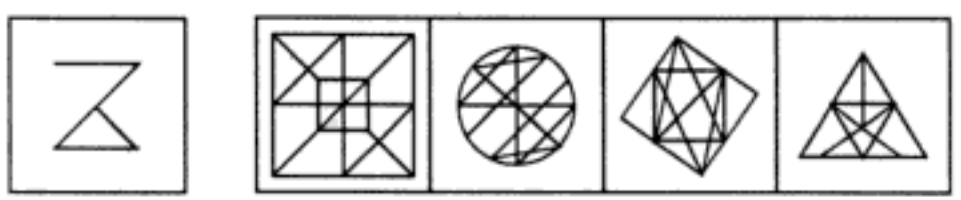
(X) (a) (b) (c) (d)

35.



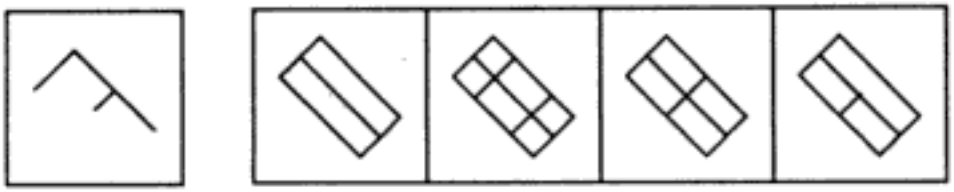
(X) (a) (b) (c) (d) **(C.B.I. 1994)**

36.



(X) (a) (b) (c) (d)

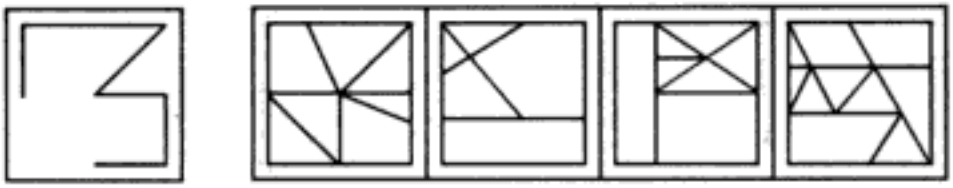
37.



(X) (a) (b) (c) (d)

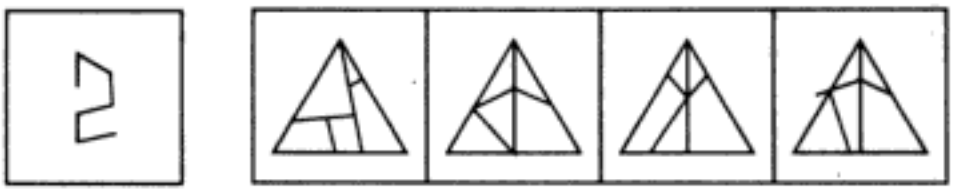
(I. Tax, 1993)

38.



(X) (a) (b) (c) (d)

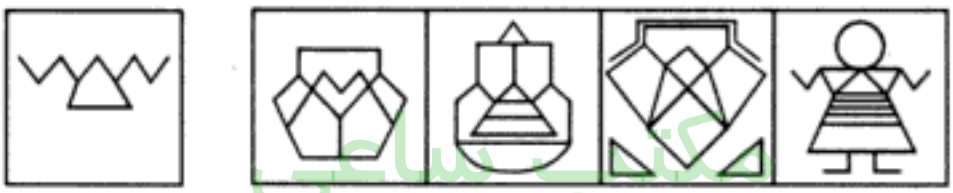
39.



(X) (a) (b) (c) (d)

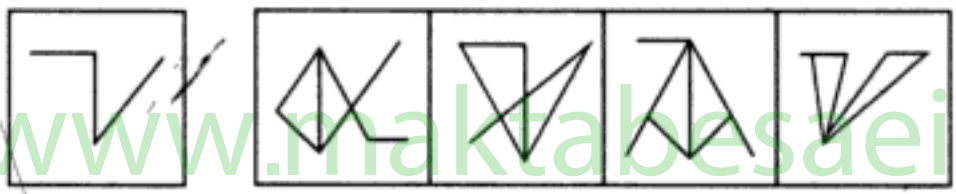
(U.D.C. 1995)

40.



(X) (a) (b) (c) (d)

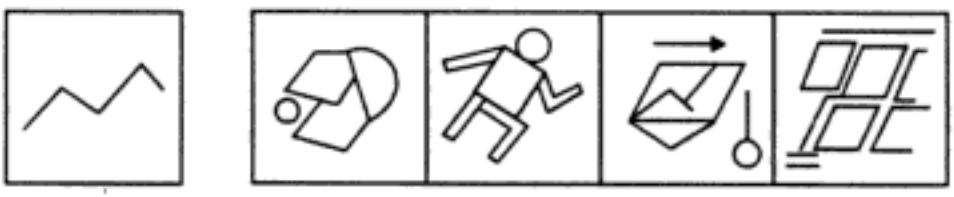
41.



(X) (a) (b) (c) (d)

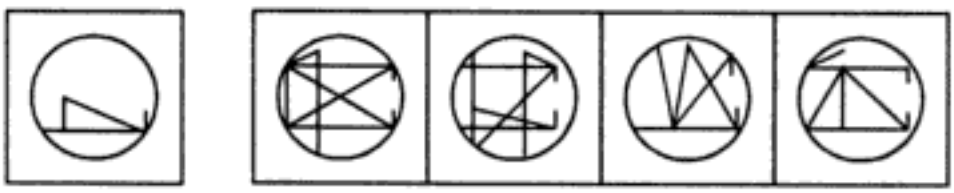
(Central Excise, 1993)

42.



(X) (a) (b) (c) (d)

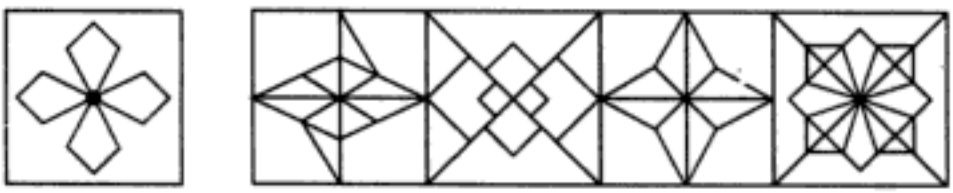
43.



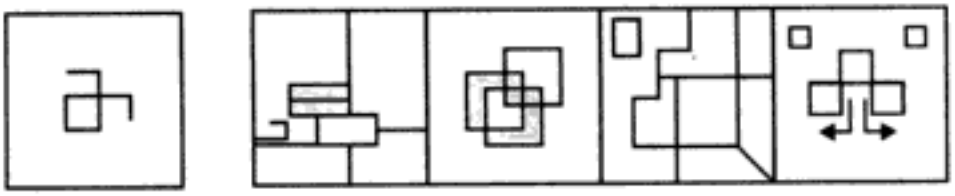
(X) (a) (b) (c) (d)

(C.B.I. 1995)

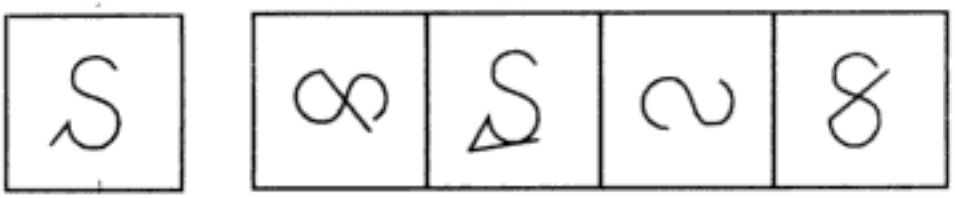
44.

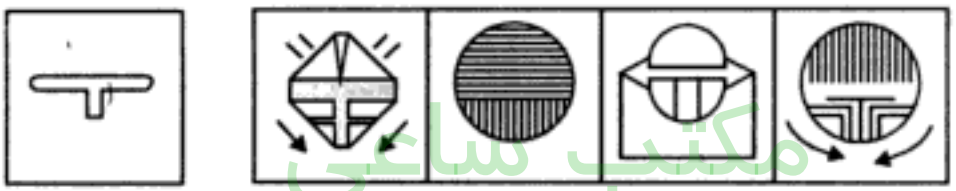


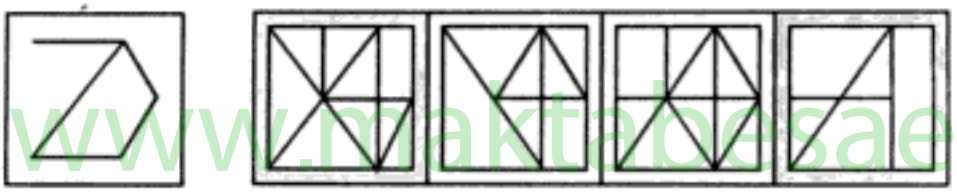
(X) (a) (b) (c) (d)

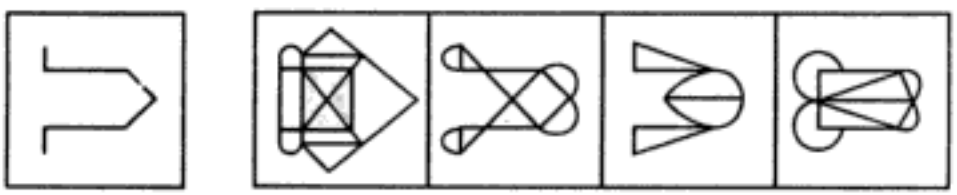
45. 
(X) (a) (b) (c) (d) (Asstt. Grade, 1996)

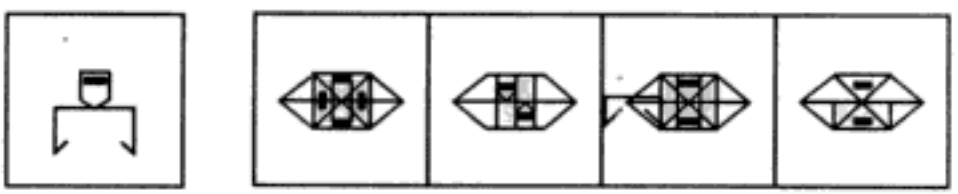
46. 
(X) (a) (b) (c) (d)

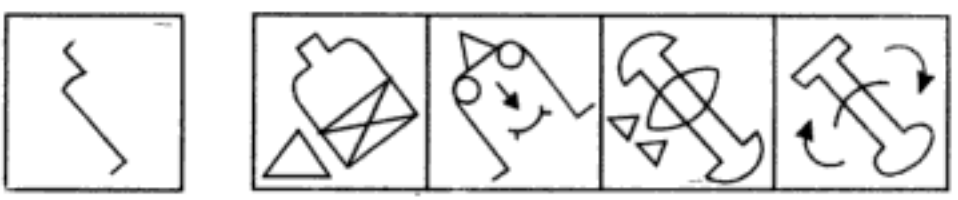
47. 
(X) (a) (b) (c) (d) (Assistant Grade, 1995)

48. 
(X) (a) (b) (c) (d)

49. 
(X) (a) (b) (c) (d) (CB.I. 1993)

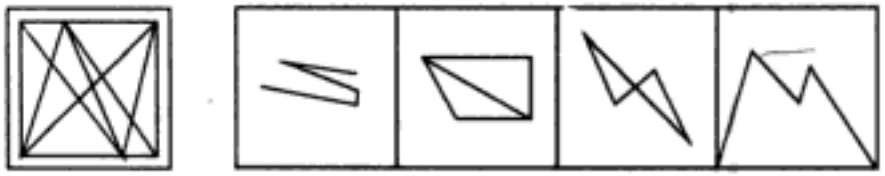
50. 
(X) (a) (b) (c) (d)

51. 
(X) (a) (b) (c) (d)

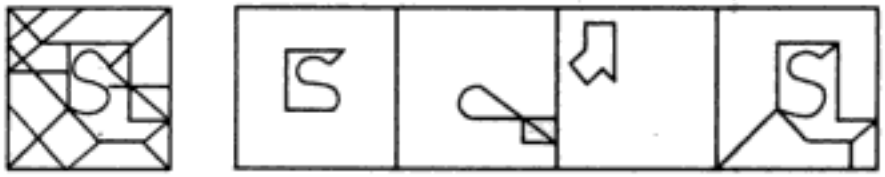
52. 
(X) (a) (b) (c) (d)

Directions : ***In each of the following questions, choose the alternative figure which is embedded in the given fig. (X).***

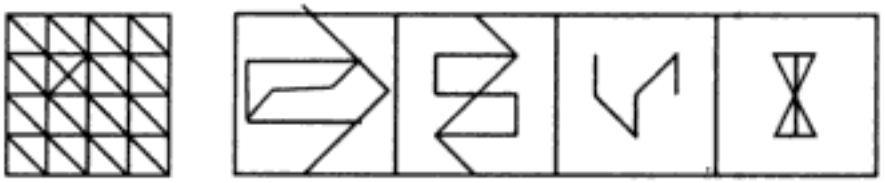
61.



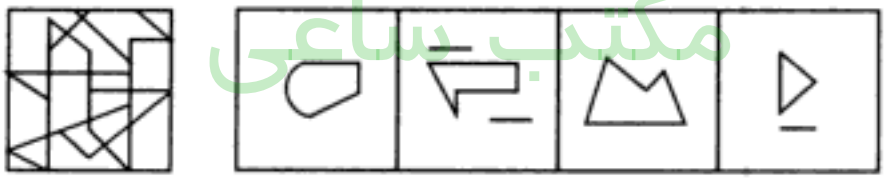
62.



63.

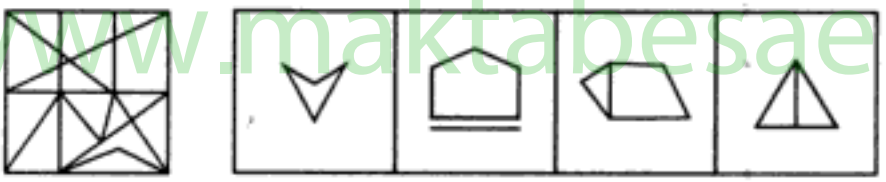


64.

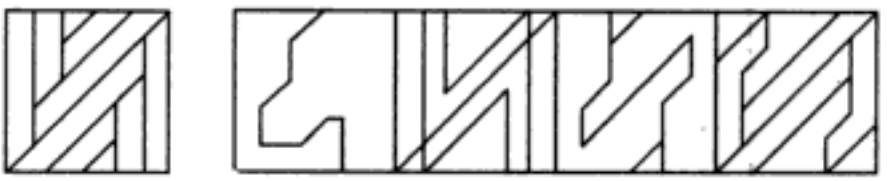


(C.B.I. 1995)

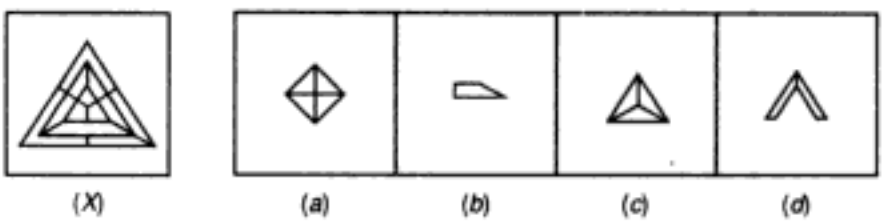
65.



66.

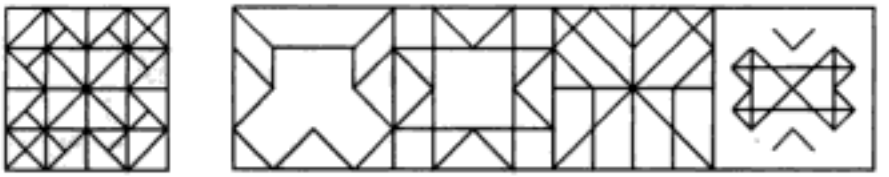


67.

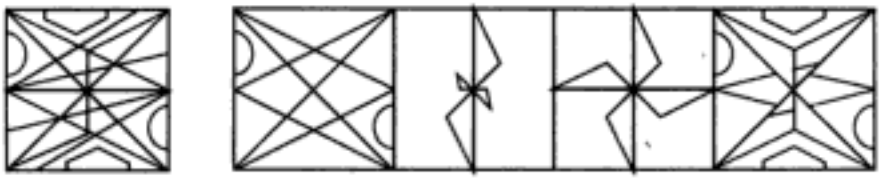


(Railways, 1993)

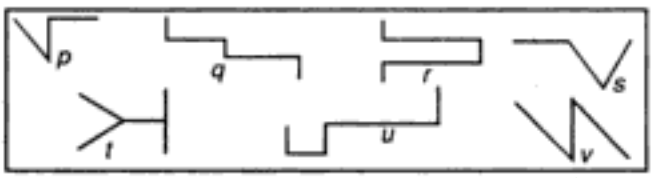
68.



69.

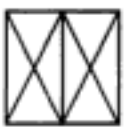


Directions : ***Consider the figures given below.***



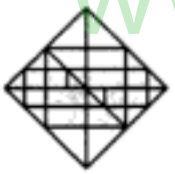
Now answer questions 70 to 74

70. Which of the above figures is embedded in the figure given below? **(C.B.I. 1992)**



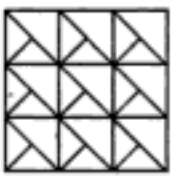
(a) r (b) s
(c) u (d) p

71. Which of the above figures is not embedded in the figure given below?



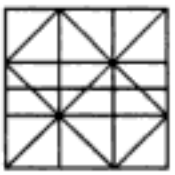
(a) r (b) s (c) q
(d) u (e) p

72. Which of the above figures is embedded in the following pattern? **(C.B.I. 1992)**



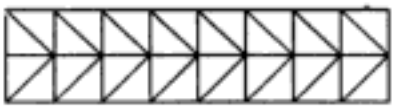
(a) q (b) t
(c) u (d) s

73. Which of the above figures is not embedded in the given pattern?



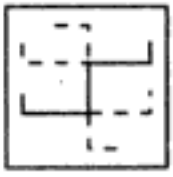
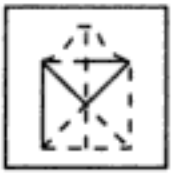
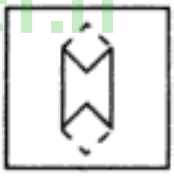
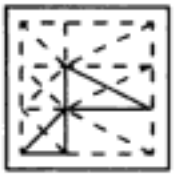
(a) p (b) q (c) r
(d) u (e) v

74. Which of the above figures is embedded in the following figure? **(C.B.I. 1992)**



(a) s (b) v
(c) r (d) q

ANSWERS

1. (c) 
2. (b) 
3. (d) 
4. (c) 
5. (d) 
6. (c) 
7. (a) 
8. (c) 
9. (d) 
10. (d) 
11. (b) 
12. (c) 
13. (d) 
14. (b) 
15. (d) 
16. (b) 
17. (d) 
18. (b) 
19. (b) 
20. (c) 
21. (d) 
22. (c) 
23. (b) 
24. (b) 
25. (c) 
26. (b) 
27. (a) 
28. (d) 
29. (c) 
30. (c) 
31. (b) 
32. (d) 
33. (d) 
34. (d) 
35. (a) 
36. (b) 

37. (c) 

38. (a) 

39. (a) 

40. (d) 

41. (b) 

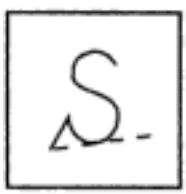
42. (b) 

43. (b) 

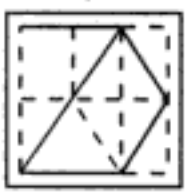
44. (d) 

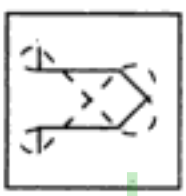
45. (b) 

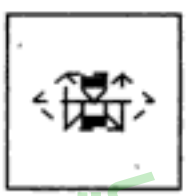
46. (d) 

47. (b) 

48. (b) 

49. (c) 

50. (b) 

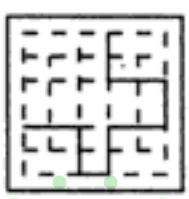
51. (c) 

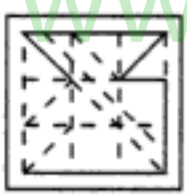
52. (c) 

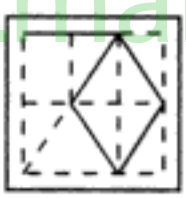
53. (d) 

54. (a) 

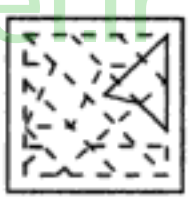
55. (d) 

56. (d) 

57. (a) 

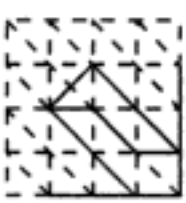
58. (b) 

59. (a) 

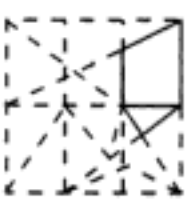
60. (a) 

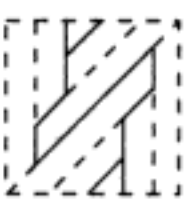
61. (a) 

62. (c) 

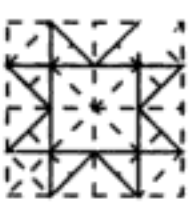
63. (a) 

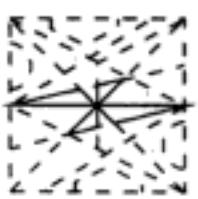
64. (d) 

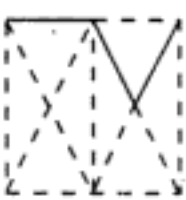
65. (c) 

66. (c) 

67. (b) 

68. (b) 

69. (b) 

70. (b) 

8. COMPLETION OF INCOMPLETE PATTERN

In this type of problems, a figure or a matrix containing a set of figures following a particular sequence or pattern is given, in which a part, generally a quarter is left blank. This problem figure is followed by four alternative figures. The candidate is required to choose the one which best fits into the blank space of problem figure so as to complete the original pattern?

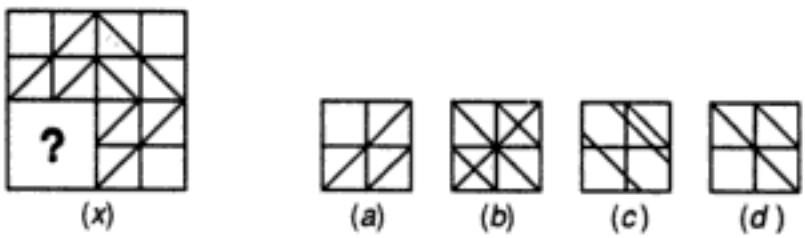
ILLUSTRATIVE EXAMPLES

Ex. 1. ***Select a figure from the four alternatives, which when placed in the blank space of fig (x) would complete the pattern.***

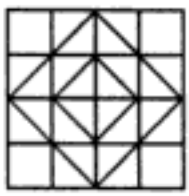
Sol. Clearly, fig. (d) will complete the pattern when placed in the blank space of fig (x) as shown below.

Henco, the answer is (*d*)

Ex. 2. ***Complete the pattern in fig (x) by selecting one of the figures from the four alternatives :***



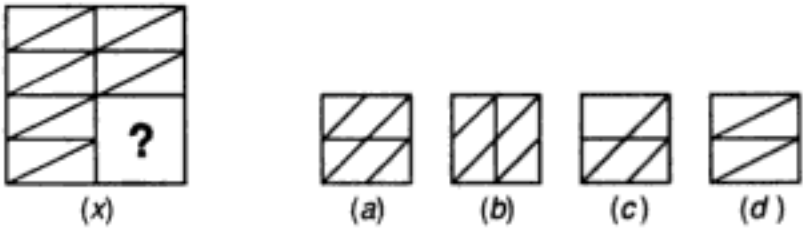
Sol. Clearly, fig (d) when placed in the blank space of fig (x) will complete the pattern, as shown below.

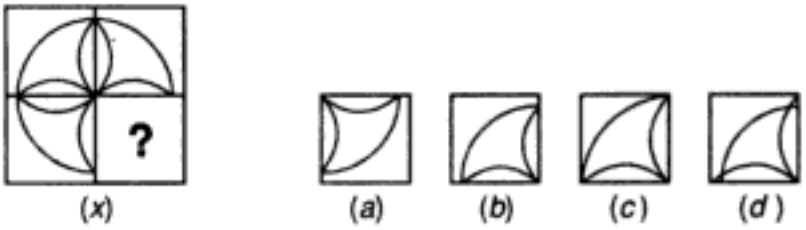


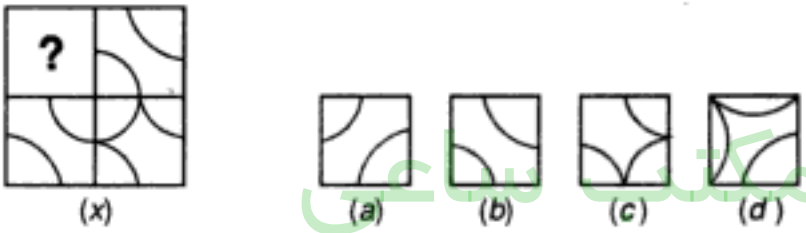
Hence, the answer is (*d*).

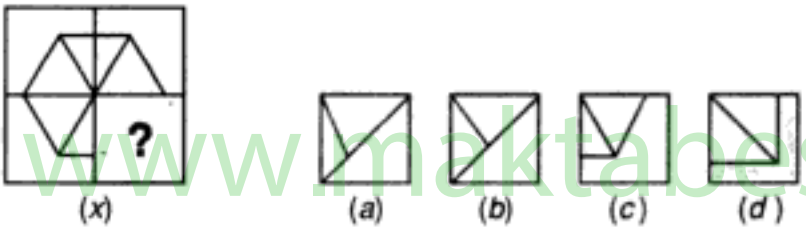
EXERCISE 8

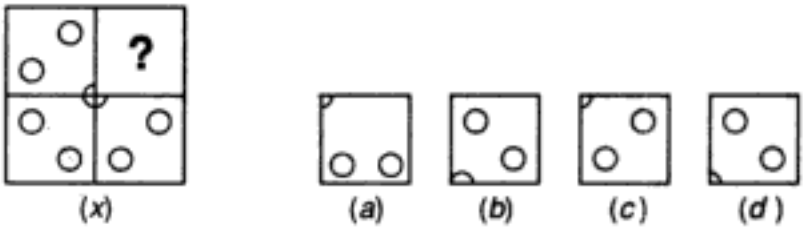
Directions : ***In each of the following questions, complete the missing portion of the given pattern by selecting from the given alternatives (a), (b), (c) and (d).***

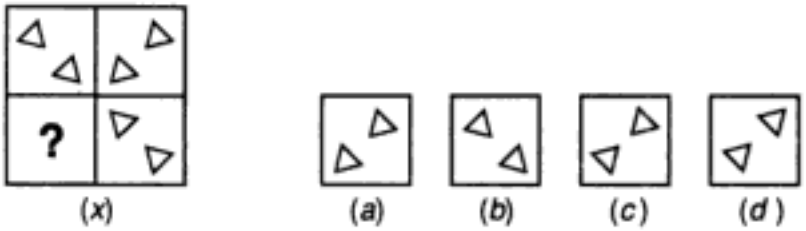
1. 
(x) (a) (b) (c) (d) **(U.D.C. 1993)**

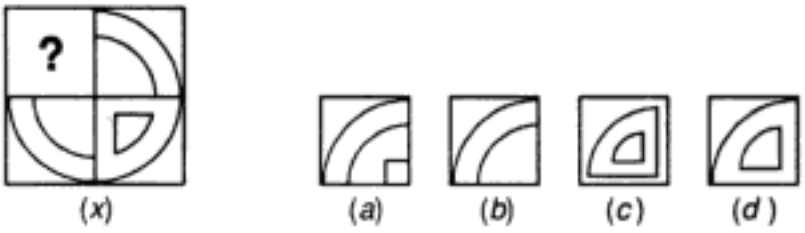
2. 
(x) (a) (b) (c) (d)

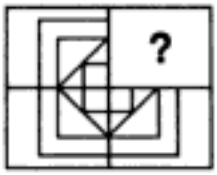
3. 
(x) (a) (b) (c) (d)

4. 
(x) (a) (b) (c) (d)

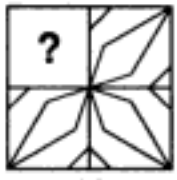
5. 
(x) (a) (b) (c) (d) **(C.B.I. 1988)**

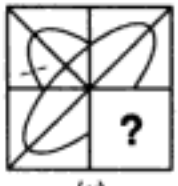
6. 
(x) (a) (b) (c) (d)

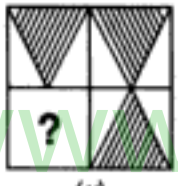
7. 
(x) (a) (b) (c) (d) **(S.S.C. 1993)**

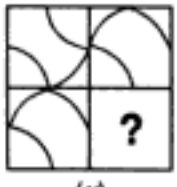
16. 
(x) (a) (b) (c) (d) (U.D.C. 1993)

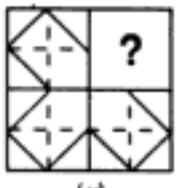
17. 
(x) (a) (b) (c) (d)

18. 
(x) (a) (b) (c) (d)

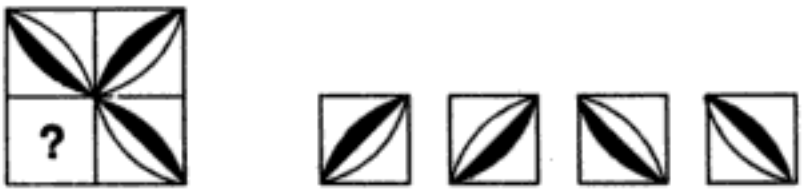
19. 
(x) (a) (b) (c) (d)

20. 
(x) (a) (b) (c) (d)

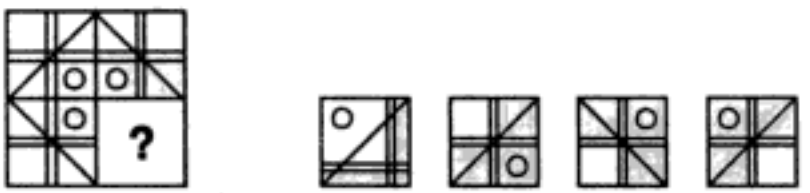
21. 
(x) (a) (b) (c) (d) (Asstt. Grade, 1993)

22. 
(x) (a) (b) (c) (d)

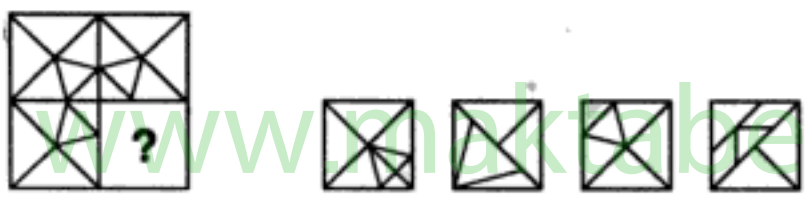
23. 
(x) (a) (b) (c) (d) (C.B.I. 1994)

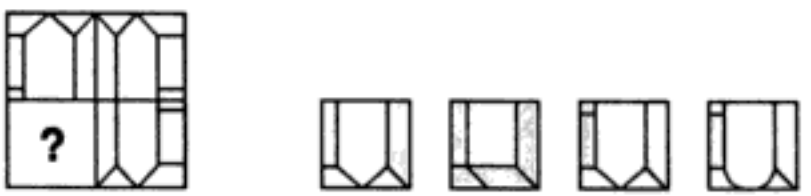
32. 
(x) (a) (b) (c) (d) (Transmission Executives', 1994)

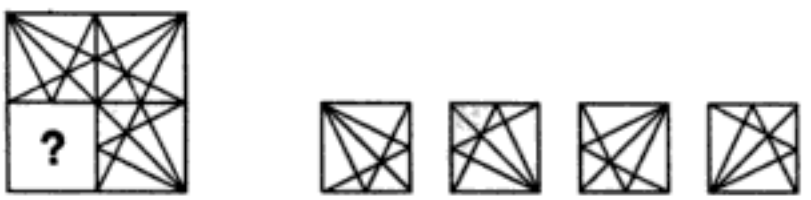
33. 
(x) (a) (b) (c) (d) (U.D.C. 1993)

34. 
(x) (a) (b) (c) (d)

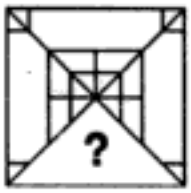
35. 
(x) (a) (b) (c) (d)

36. 
(x) (a) (b) (c) (d) (C.B.I. 1994)

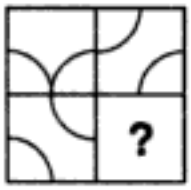
37. 
(x) (a) (b) (c) (d)

38. 
(x) (a) (b) (c) (d) (Transmission Executives', 1994)

39. 
(x) (a) (b) (c) (d)

40. 
(x)

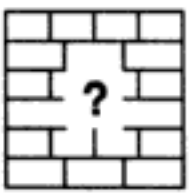
(a) (b) (c) (d)
(U.D.C. 1995)

41. 
(x)

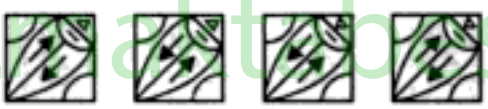
(a) (b) (c) (d)
(Asstt. Grade, 1995)

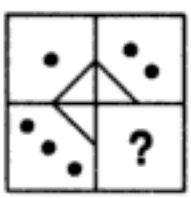
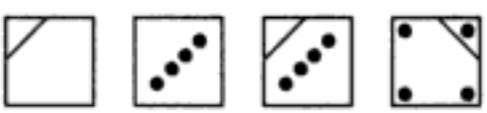
42. 
(x)

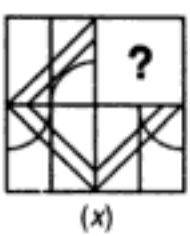
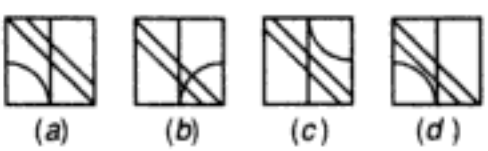
(a) (b) (c) (d)
(S.S.C. 1993)

43. 
(x)

(a) (b) (c) (d)
(U.D.C. 1993)

44. 
(x)

(a) (b) (c) (d)

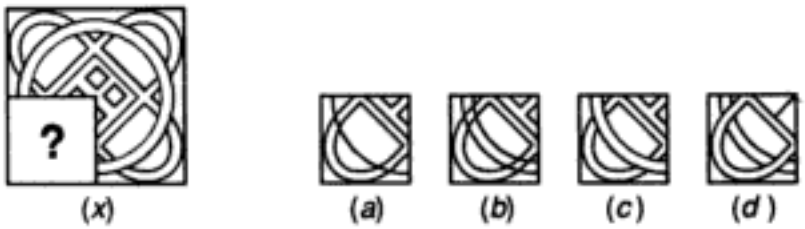
45. 
(x)

(a) (b) (c) (d)
(Asstt. Grade, 1995)

46. 
(x)

(a) (b) (c) (d)

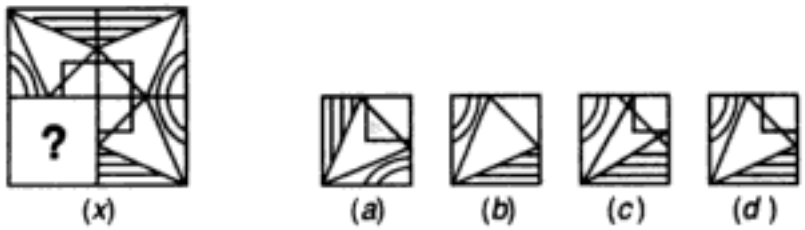
47. 
(x)

(a) (b) (c) (d)
(U.D.C. 1995)

48.



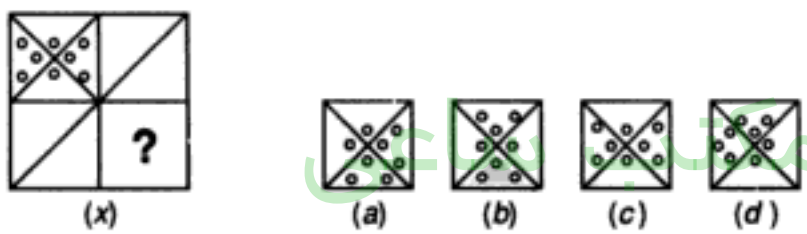
49.



50.

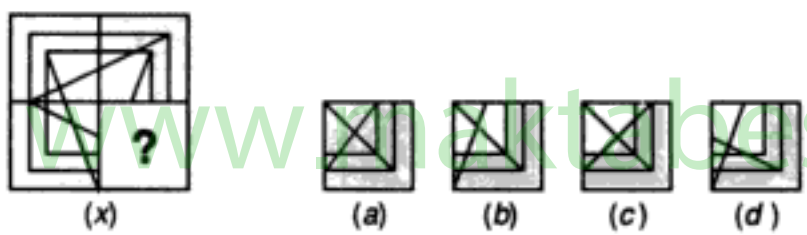
(U.D.C. 1995)

51.

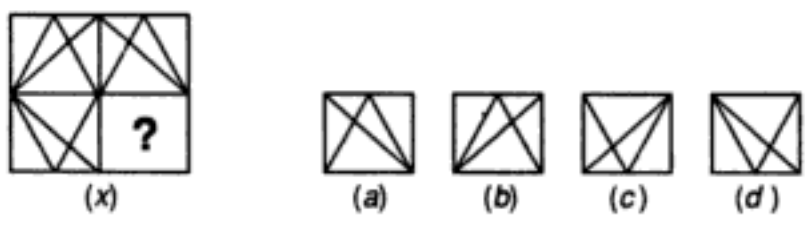


(Asst. Grade, 1995)

52.

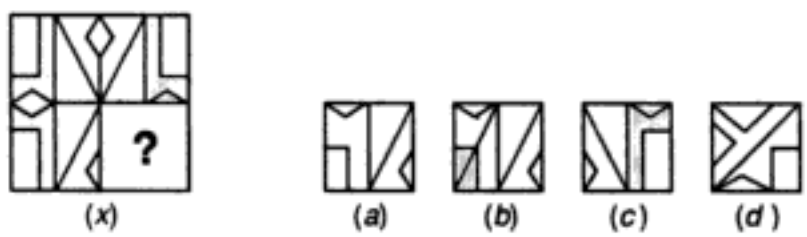


53.

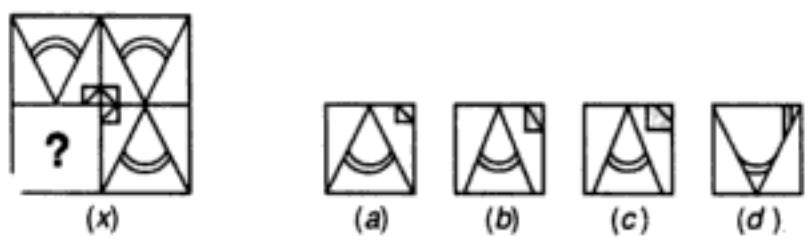


(S.S.C. 1995)

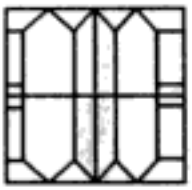
54.

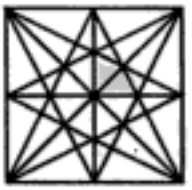


55.

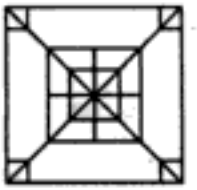


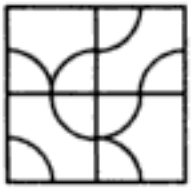
(U.D.C. 1995)

37. (c) 

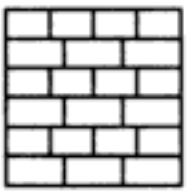
38. (d) 

39. (a) 

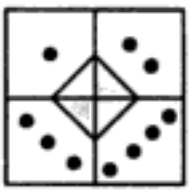
40. (d) 

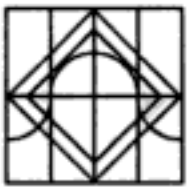
41. (a) 

42. (d) 

43. (d) 

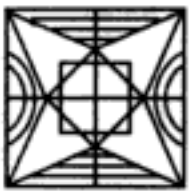
44. (d) 

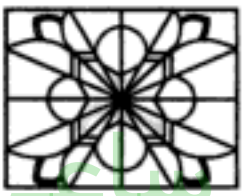
45. (c) 

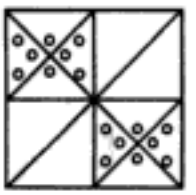
46. (d) 

47. (a) 

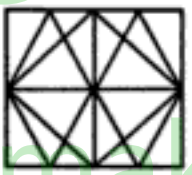
48. (c) 

49. (d) 

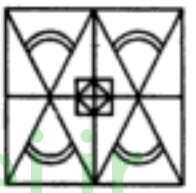
50. (b) 

51. (c) 

52. (d) 

53. (c) 

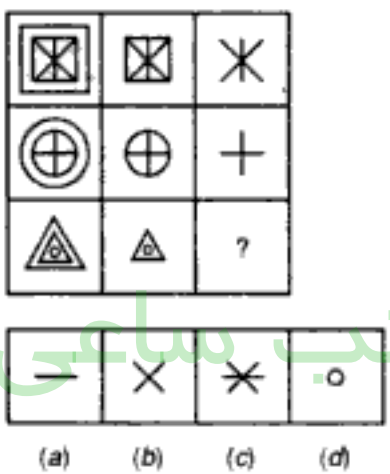
54. (c) 

55. (a) 

9. FIGURE MATRIX

In this type of questions, more than one set of figures is given in the form of a matrix, all of them following the same rule. The candidate is required to analyse the complete sets; find out the common rule and then on its basis, find the missing figure in the incomplete set.

Example 1 : ***Select one alternative figure out of (a), (b), (c) and (d), which completes the given matrix.***



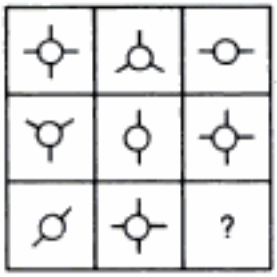
(Assistant Grade, 1994)

Solution : Clearly, in the first and second rows, the second figure is the inner part of the first figure and the third figure is the inner part of the second figure.
Thus, the missing figure should be the inner part of the second figure in third row, i.e. a small circle.
Hence, the answer is (d).

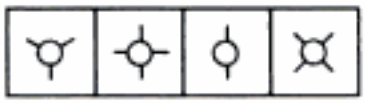
EXERCISE 9

Directions : ***In each of the following questions, find out which of the answer figures (a), (b), (c) and (d) completes the figure - matrix ?***

1.

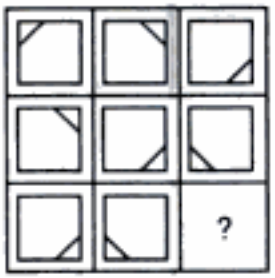


(Asstt. Grade, 1995)



(a) (b) (c) (d)

2.



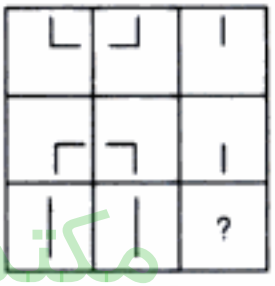
(Railways, 1994)

(a) (b) (c) (d)

3.

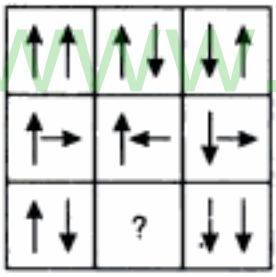
(a) (b) (c) (d)

4.

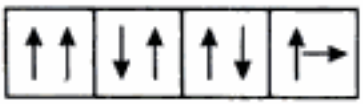


(a) (b) (c) (d)

5.

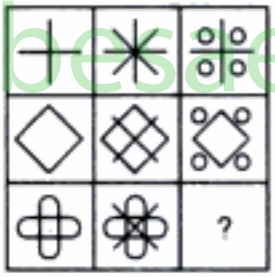


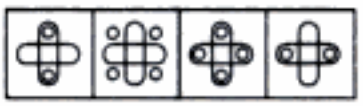
(Railways, 1993)



(a) (b) (c) (d)

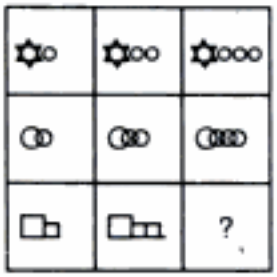
6.



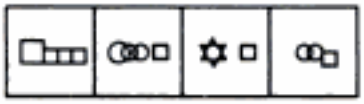


(a) (b) (c) (d)

7.

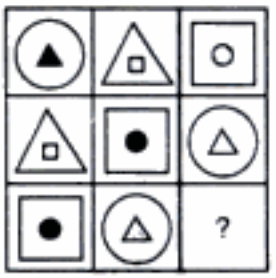


(Assistant Grade, 1995)



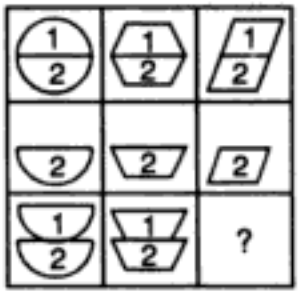
(a) (b) (c) (d)

8.

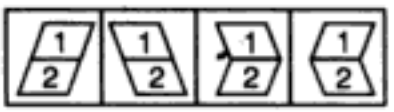


(a) (b) (c) (d)

9.

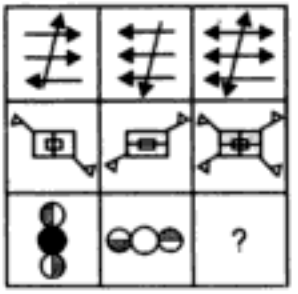


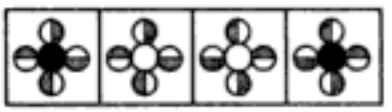
(P.C.S. 1995)



(a) (b) (c) (d)

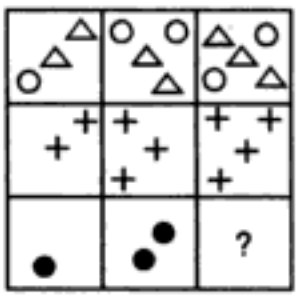
10.



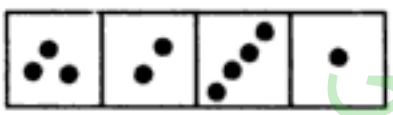


(a) (b) (c) (d)

11.

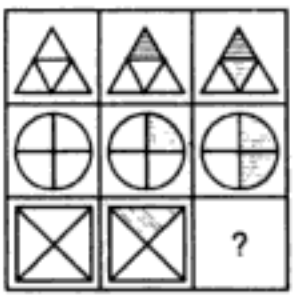


(C.B.I. 1993)



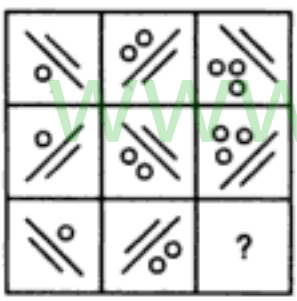
(a) (b) (c) (d)

12.

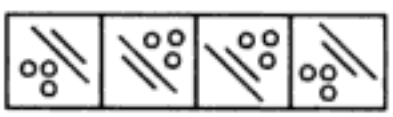


(a) (b) (c) (d)

13.

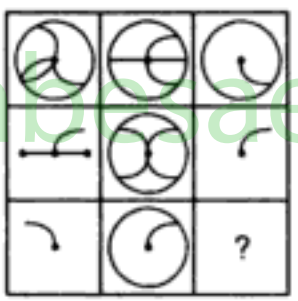


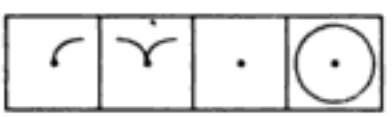
(Asstt. Grade, 1996)



(a) (b) (c) (d)

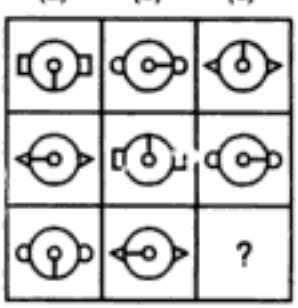
14.

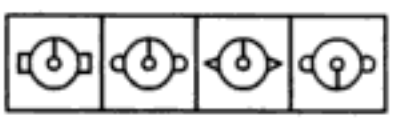




(a) (b) (c) (d)

15.

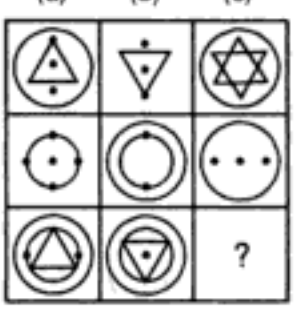


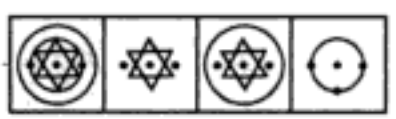


(a) (b) (c) (d)

(Investigators' Exam, 1992)

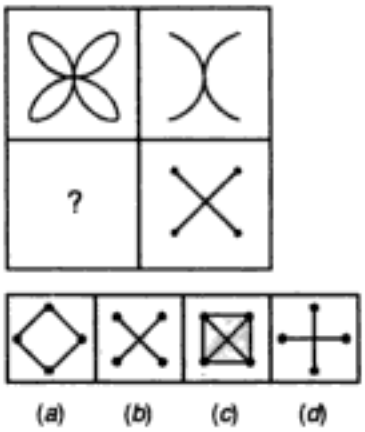
16.





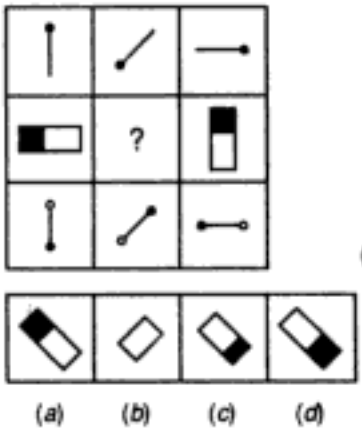
(a) (b) (c) (d)

25.



(a) (b) (c) (d)

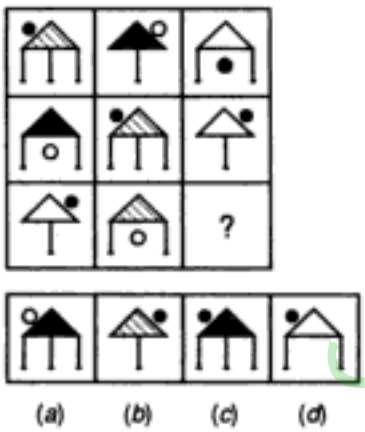
26.



(C.B.I. 1993)

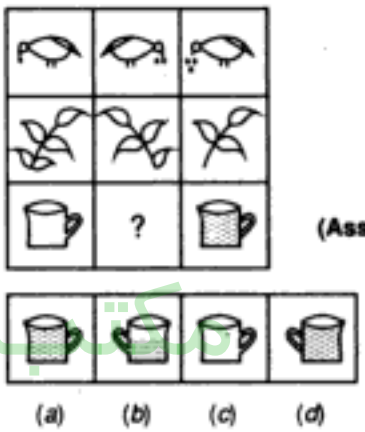
(a) (b) (c) (d)

27.



(a) (b) (c) (d)

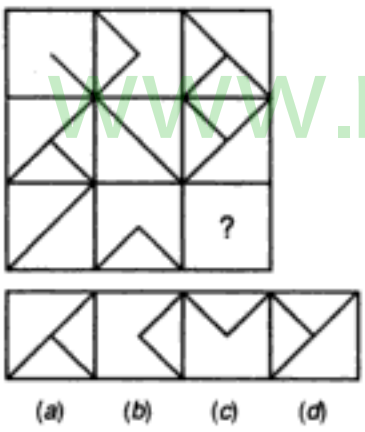
28.



(Assistant Grade, 1996)

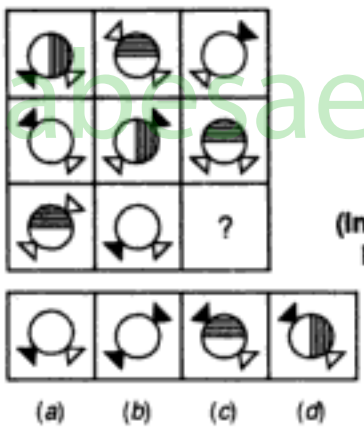
(a) (b) (c) (d)

29.



(a) (b) (c) (d)

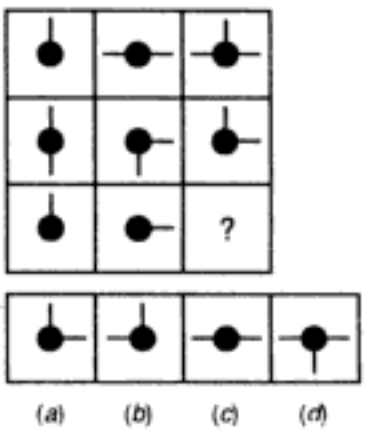
30.



(Investigators' Exam, 1992)

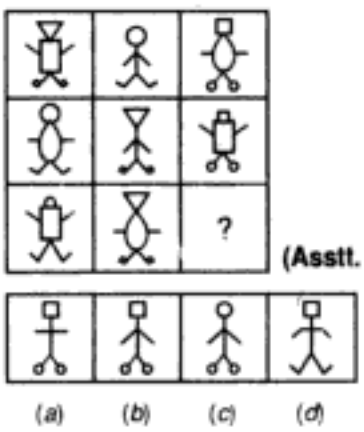
(a) (b) (c) (d)

31.



(a) (b) (c) (d)

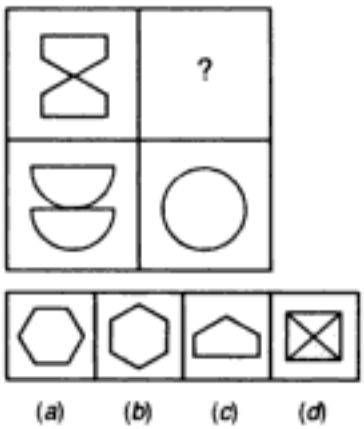
32.



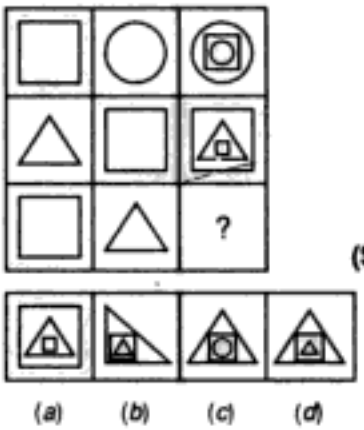
(Asstt. Grade, 1994)

(a) (b) (c) (d)

33.

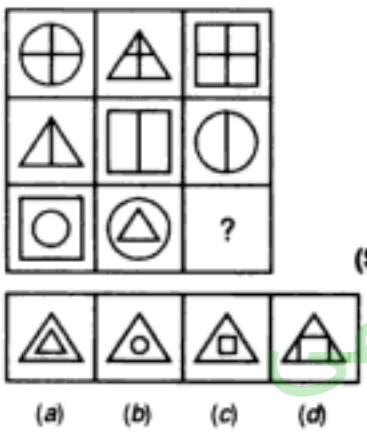


34.



(S.S.C. 1995)

35.



(S.S.C. 1995)

ANSWERS

1. (*b*) : Each row of the matrix contains one circle with two bars, one with three bars and one circle with four bars.

2. (*b*) : The line inside the square moves from one corner to another, clockwise, as we move from left to right in a row.

3. (*d*) : The third tile from the left, in a row has design which is a union of the designs of the two tiles on its left.

4. (*c*) : The third coloumn contains the line which is common to the designs in the first two columns.

5. (*a*) : Second figure in each row consists of first arrow of the first figure as such and the second one in an inverted position. The third figure consists of the first arrow of the first figure in an inverted position and the second arrow as such.

6. (*b*) : As we move from the first to the second figure in a row, the figure gets intersected by two mutually perpendicular lines. In the next step, dots appear at the ends of these lines and the lines disappear to give the third figure.

7. (*a*) : In each row, the number of smaller figures increase by one at each step from left to right.

8. (*c*) : There are 3 outer figures (circle, triangle & square), 3 inner figures (circle, triangle and square) and 3 types of shading—plane, line and dark.

9. (*c*) : Each figure in third row comprises of fig. 1 of first row in inverted position and fig. 2 as it is.

10. (*d*) : The third figure in each row is the union of first two figures.

11. (*a*) : The number of objects increases by 1 at each step from left to right in each row.

12. (*b*) : The first figure in each row is completely unshaded, the second one has one-fourth part shaded and the third one is half shaded.

13. (*b*) : In each figure, the circles are towards the longer line. The number of circles increases by 1 at each step from left to right in each row. Also, the positions of the lines in the first and third figures are identical.

14. (*c*) : The third figure in each row comprises of the parts common to the first two figures.

15. (*a*) : In the third row, the inner circle with the bar moves 90° clockwise at each step. Also, there are 3 types of side figures—triangle, circle and square, of which only square remains unused in the third row.

16. (*b*) : The third figure in each row comprises of parts which are not common to the first two figures.

17. (*b*) : The number of squares follow the pattern +1 in first row, +2 in second row and +3 in third row.

18. (*c*) : The third figure in each row comprises of parts which are not common to the first two figures.

19. (*a*) : There are three types of arrows—a single arrow with a line, a double arrow and a triple arrow. There are 3 positions of arrows—upwards, downwards and sideways towards right. The arrows have 3 types of bases—plane, rectangular and circular. Each of these features is used once in each row.

20. (*d*) : The number of dots in the second figure is thrice the number in the first figure in each row.

21. (*b*) : The number of each type of figures decreases by 1 at each step from left to right in each row.

22. (*d*) : There are 3 types of faces, 3 types of hands and 3 types of legs. Each type is used once in each row. So, the features not used in the first two figures of the third row would together from the missing figure.

23. (*d*) : The third figure in each row comprises of parts which are not common to the first two figures.

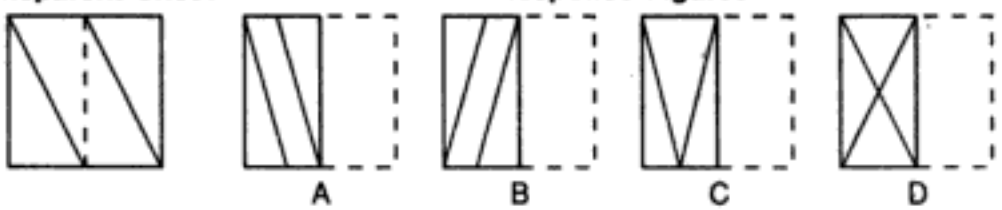
10. PAPER FOLDING

The problems based on paper folding involve the process of selecting a figure which would most closely resemble the pattern that would be formed when a transparent sheet carrying designs on either side of a dotted line, is folded along this line. The figure has to be selected from a set of four alternatives.

Directions : ***In each one of the following examples, find from amongst the four response figures, the one which resembles the pattern formed when the transparent sheet, carrying a design is folded along the dotted line.***

Example 1 :

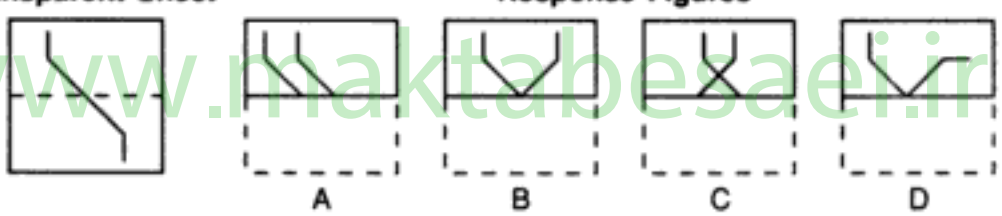
Transparent Sheet **Response Figures**



Solution : The right halves of the response figures being dotted, indicate that the right half of the transparent sheet has been folded and placed over the left half. Visualising the combination of the designs on the two parts, we obtain fig. (D).
Hence, fig. (D) is the correct answer.

Example 2 :

Transparent Sheet **Response Figures**



Solution : Clearly, the lower half of the square sheet has been folded over the upper half. Hence, the bent line in the lower half will be inverted over the other half so that a 'V' shaped figure is formed.
Hence, the answer is (B).

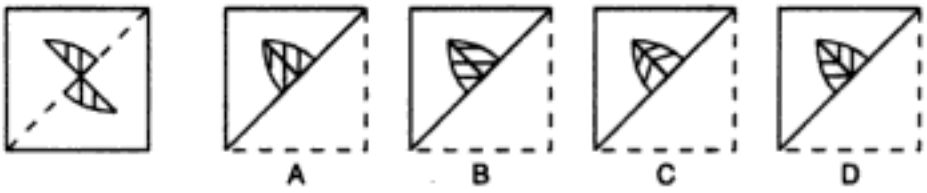
Example 3 :

Transparent Sheet **Response Figures**

Solution : The circular sheet of transparent paper has been folded along the dotted line such that left half overlaps the right half and consequently the smaller arrows will appear to penetrate inside the larger ones.
Hence, fig. (C) is the answer.

Example 4 :

Transparent Sheet **Response Figures**



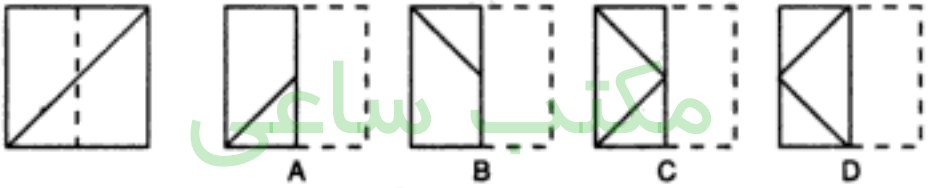
Solution : Here, the sheet has been folded diagonally and the designs on the either side of the dotted line combine to form fig. (D).
Hence, fig. (D) is the answer.

EXERCISE 10

Directions : ***In each one of the following problems, a square transparent sheet with a pattern is given. Figure out from amongst the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.***

Transparent Sheet **Response Figures**

1.



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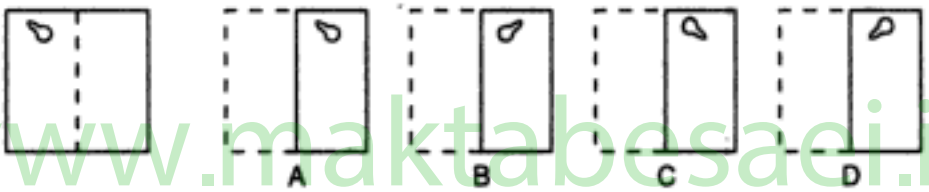
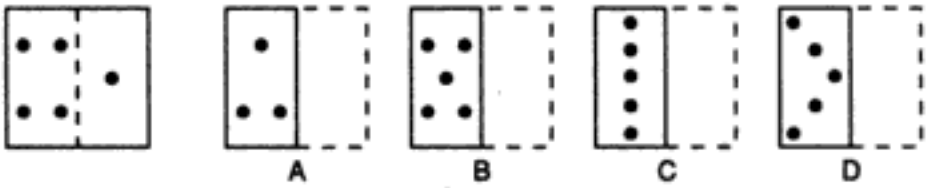


(C.B.I. 1989)

3.



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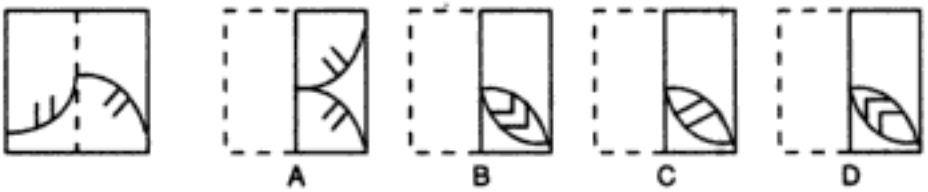
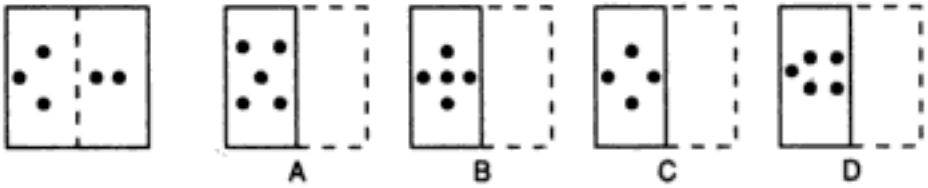
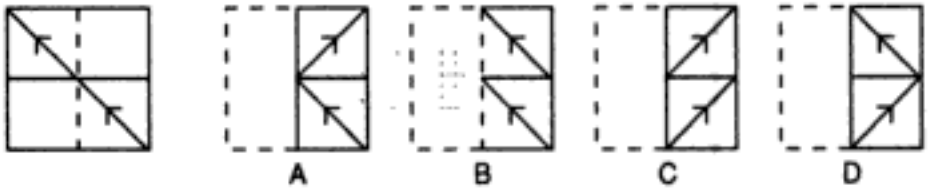


5.

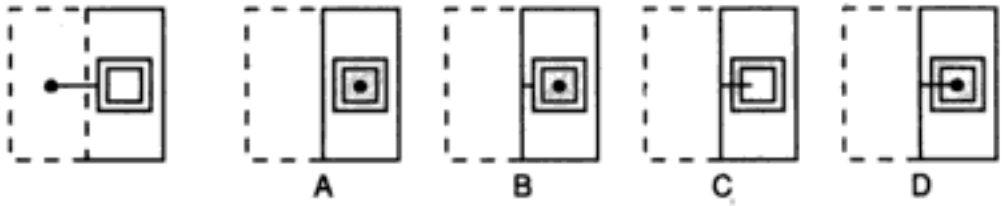


6.

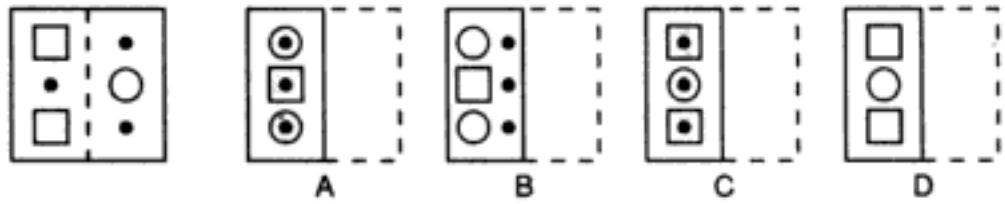


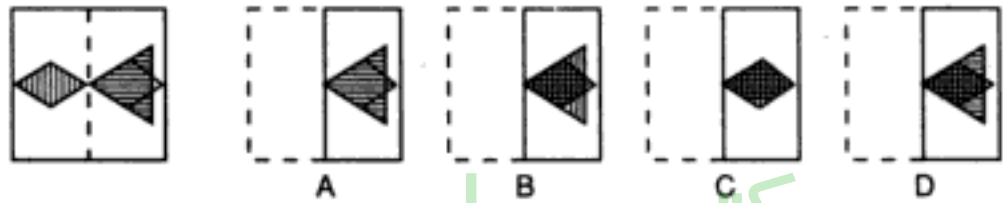
(C.B.I. 1990)

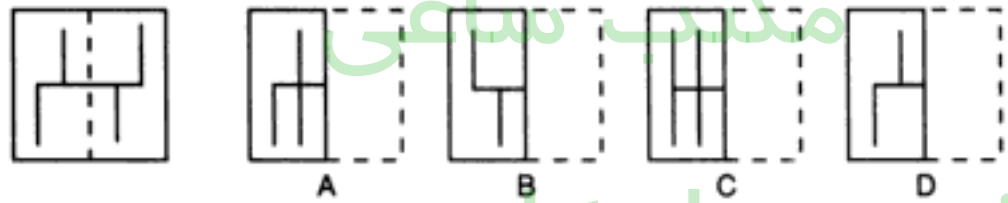
Transparent Sheet **Response Figures**

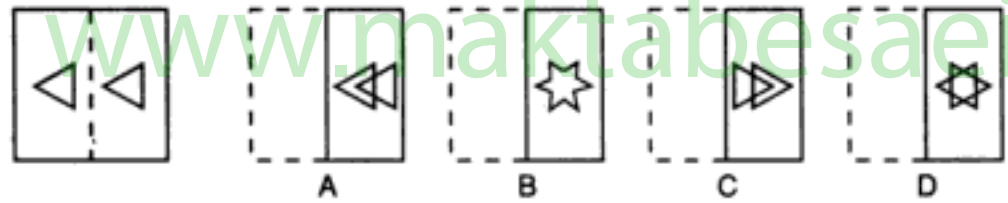
7. 

8. 

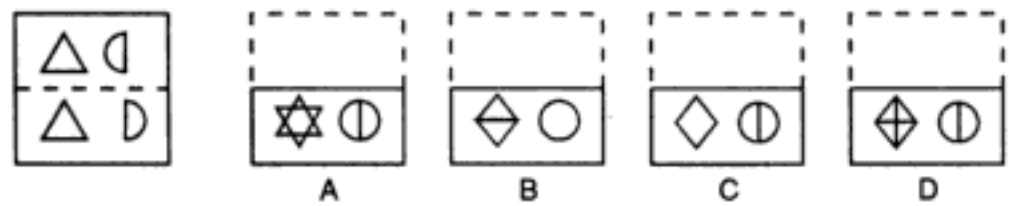
9. 

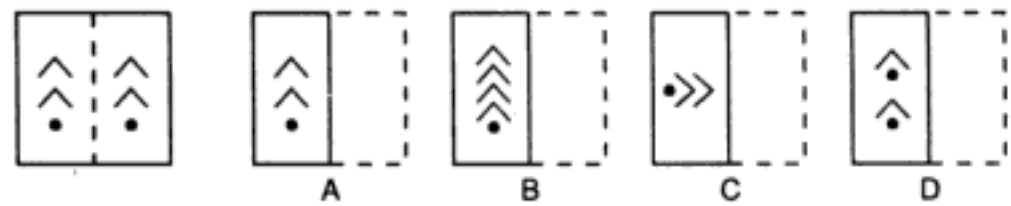
10. 

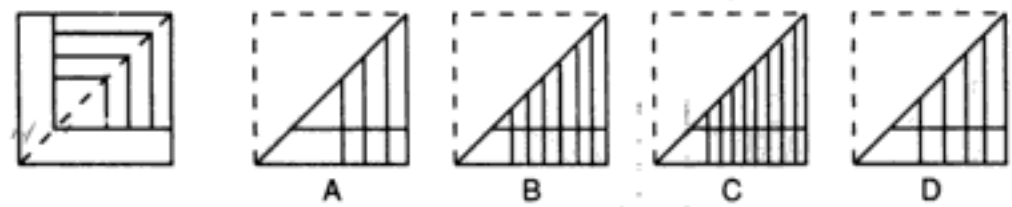
11. 

12. 

(Delhi Police, 1989)

13. 

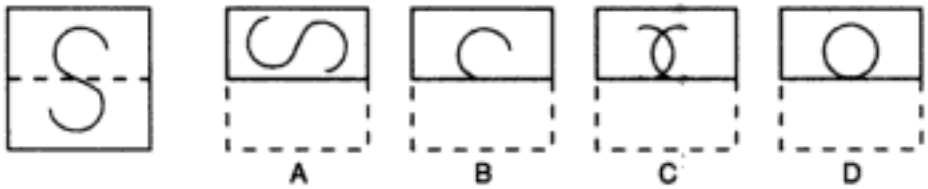
14. 

15. 

(C.B.I. 1990)

Transparent Sheet | Response Figures

16.



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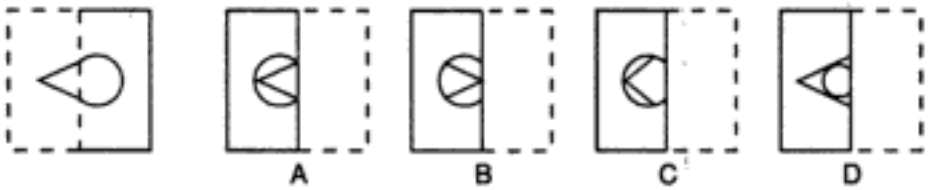

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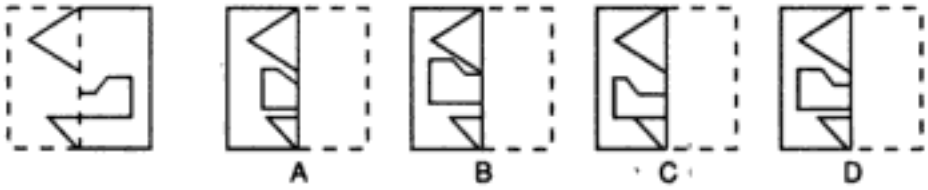

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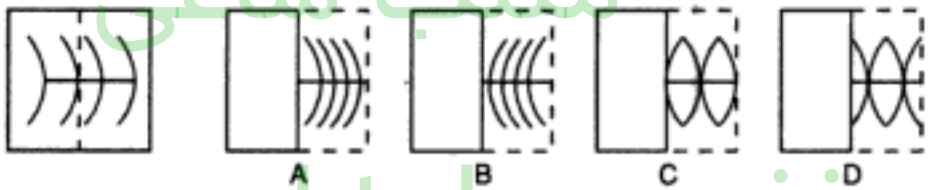

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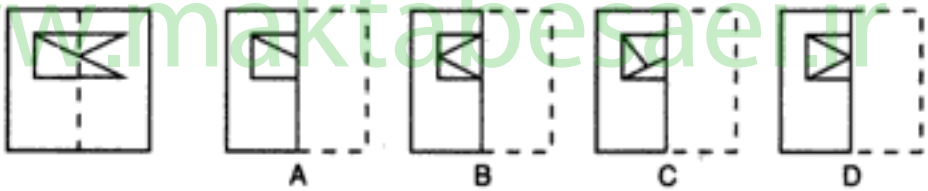

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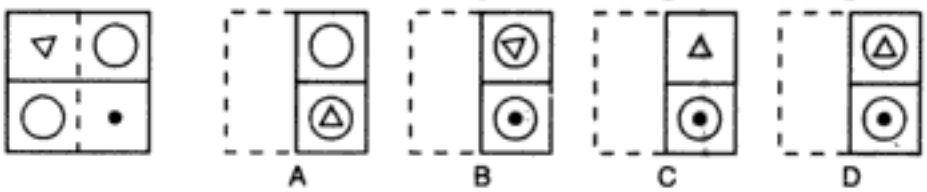

(C.B.I. 1990)

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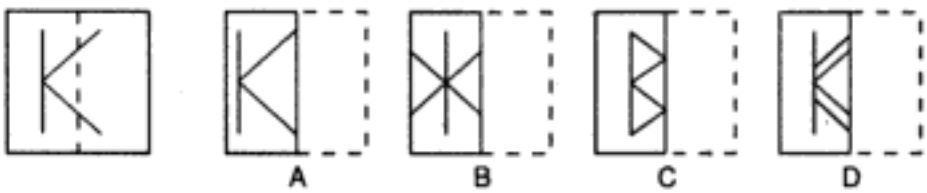

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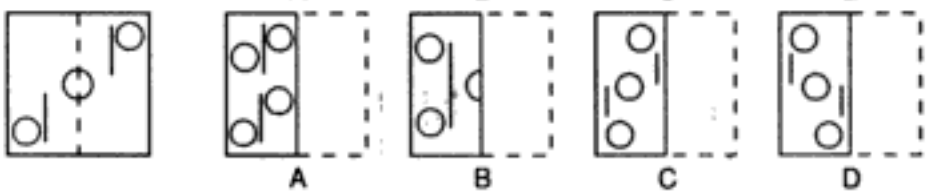


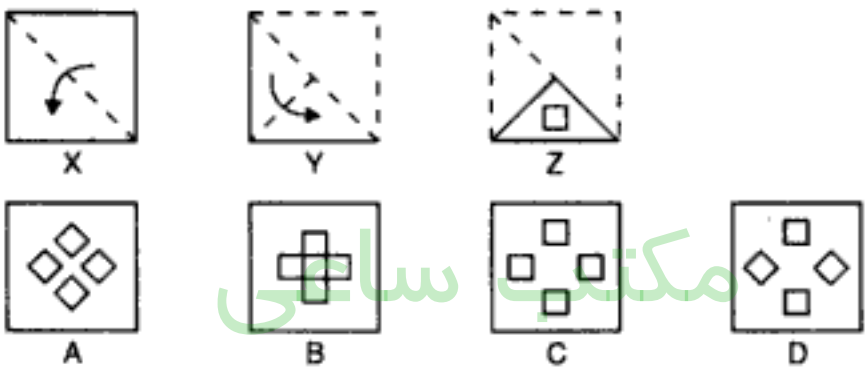
11. PAPER CUTTING

In this chapter we shall study the problems relating to the analysis of pattern that is formed when a folded piece of paper has been cut in a definite design.

Problems on Paper Cutting : In this type of questions, a set of three figures showing the manner in which a piece of paper has been folded, are being given. In each of the first two figures, a dotted line together with an arrow on it has been given. The dotted line is the reference line along which the paper has to be folded and the arrow indicates the direction of the fold. In the third figure, there are marks showing the position and the nature of the cut made in the folded sheet. The examinee has to select one of the figures from the set of four answer figures A, B, C and D which would most closely resemble the pattern when the paper is unfolded.

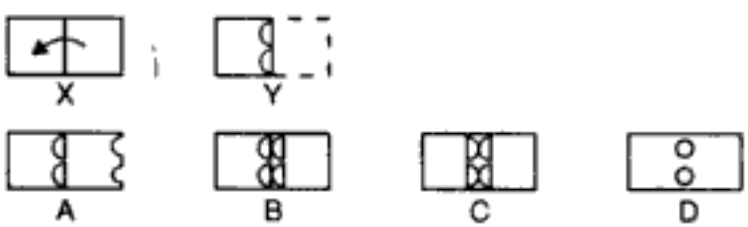
Remark : Evidently, the designs of the cut will appear on each one of the folds made in the paper.

Ex. 1. ***Consider the following three figures, marked X, Y, Z showing one fold in X, another in Y and cut in Z. From amongst the answer figures A, B, C and D, select the one, showing the unfolded position of Z.***



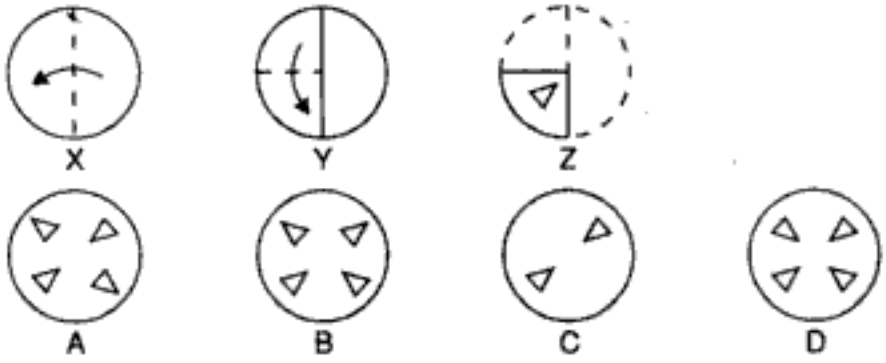
Sol. In fig. X, the upper triangular half of the paper has been folded over the lower half.
In fig. Y, the paper is refolded to a quarter triangle.
In fig. Z, a square has been punched in the folded paper.
Clearly, the square will appear in each of the triangular quarters of the paper.
Thus, when the paper is unfolded, four squares will appear symmetrically over it and it will resemble fig. (C).

Ex. 2. ***Consider the figures X and Y showing a rectangular sheet of paper folded in fig. X and punched in fig. Y. From amongst the answer figures A, B, C and D, select the figure, which will most closely resemble the unfolded position of fig. Y.***



Sol. In fig. X, the right half of the rectangular paper sheet is folded over the left half. In fig. Y, two semicircles are punched into the folded paper. When the paper is unfolded, the semicircles in the two halves will join to form circles. Thus, two circles will appear in the unfolded position of fig. Y. Hence, fig. (D) is the correct answer.

Ex. 3. ***In the following question, three figures X, Y, Z, showing a sequence of folding a paper are given. The third figure depicts the cuts made in the folded paper. Select the figure from the answer figures marked A, B, C and D which would most closely resemble the third paper when unfolded.***



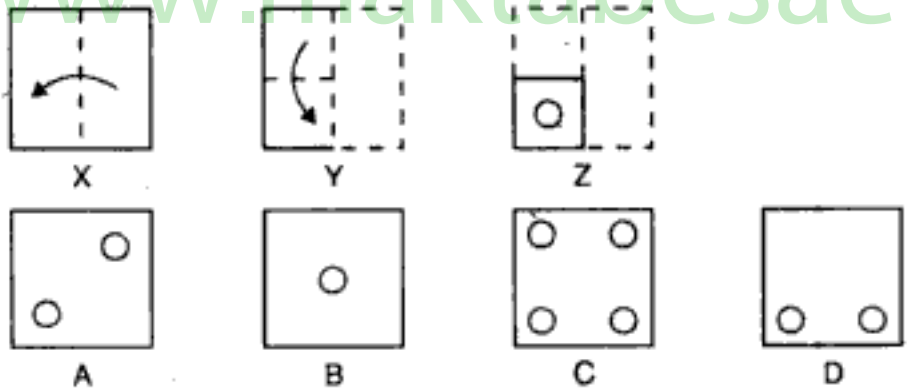
Sol. Here, the circular sheet of paper is once folded along a diameter such that one semicircle lies above another. Now, the sheet is refolded along the line of symmetry such that all the quarter circles lie one above another. Then a triangular cut is made on the folded sheet. When this sheet is unfolded once, it will appear as shown below :

This sheet when completely unfolded will contain triangles on each quarter and will appear as fig. (*D*).
Hence, the answer is fig. (*D*).

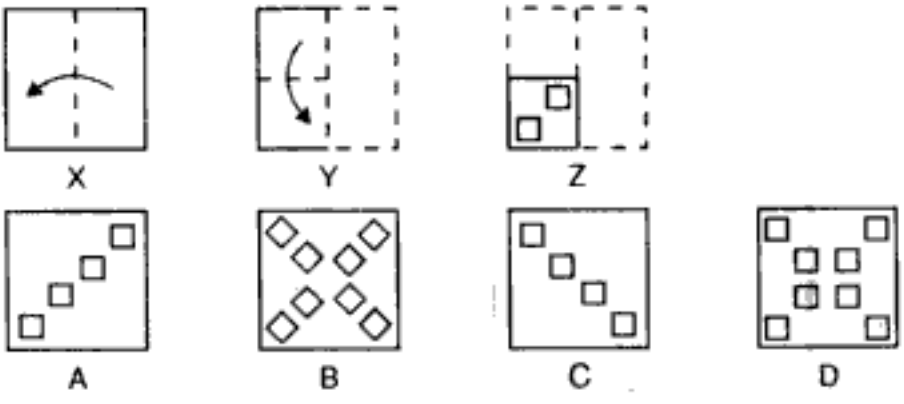
EXERCISE 11

Directions : ***The questions that follow contain a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. These three figures are followed by four answer figures from which you have to choose a figure which would most closely resemble the unfolded form of fig. (Z).***

1.



2.



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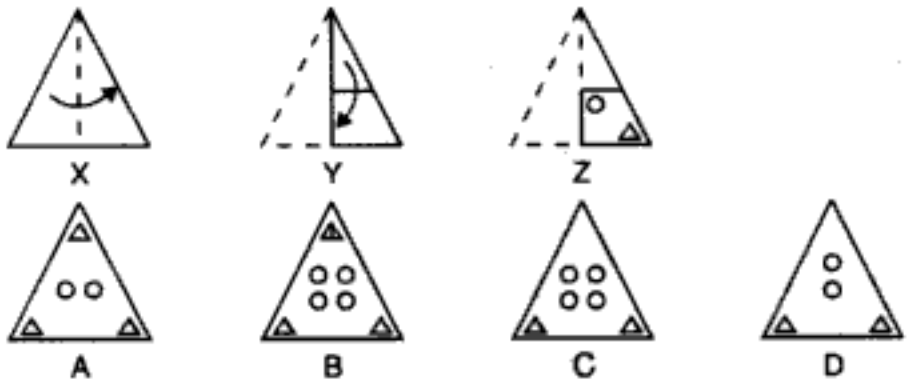
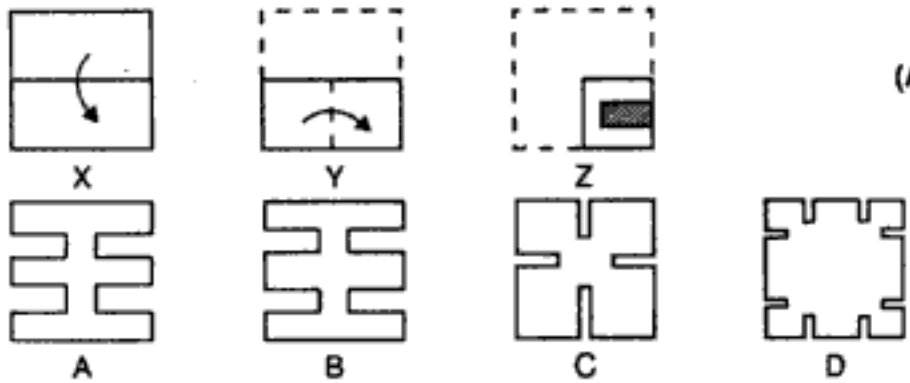
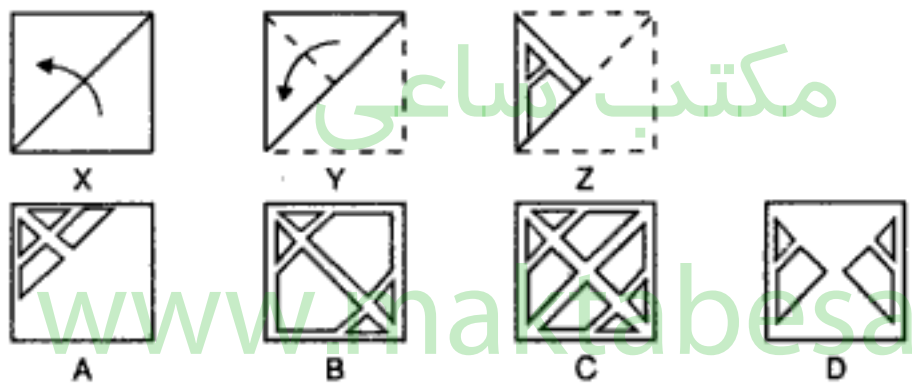


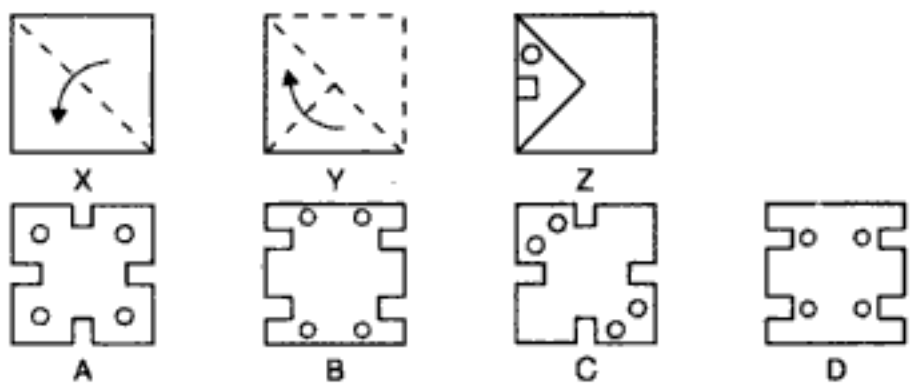
9. (Assistant Grade, 1993)



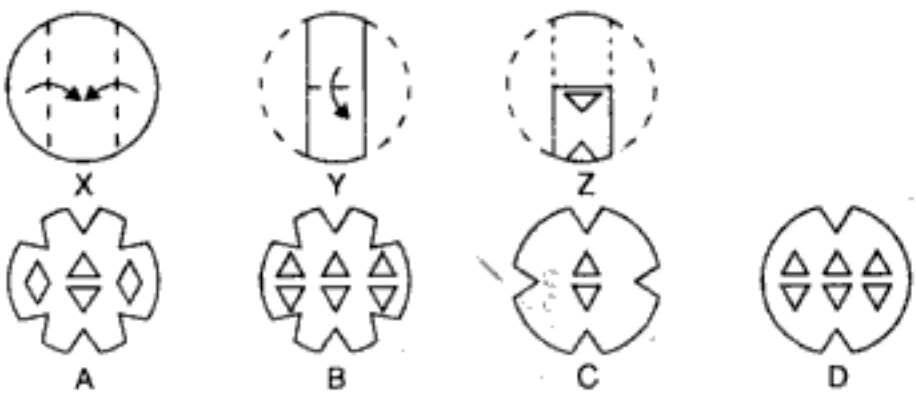
10.



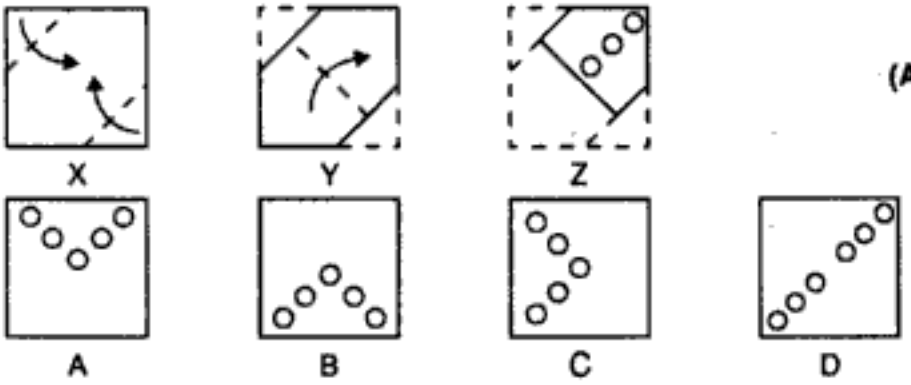
11. (S.S.C. 1993)



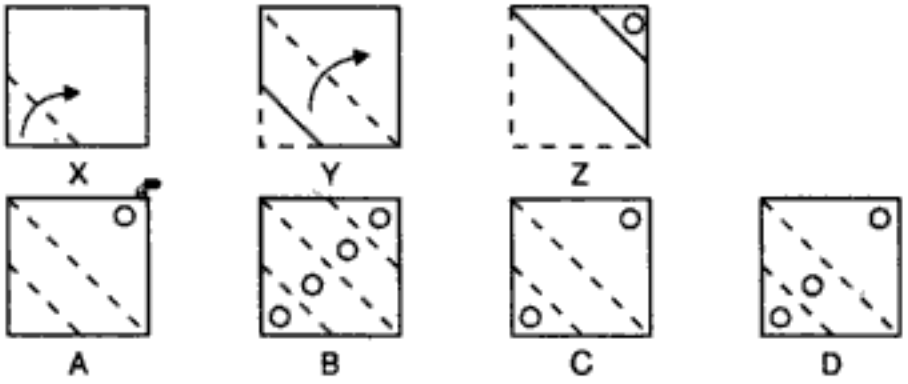
12.



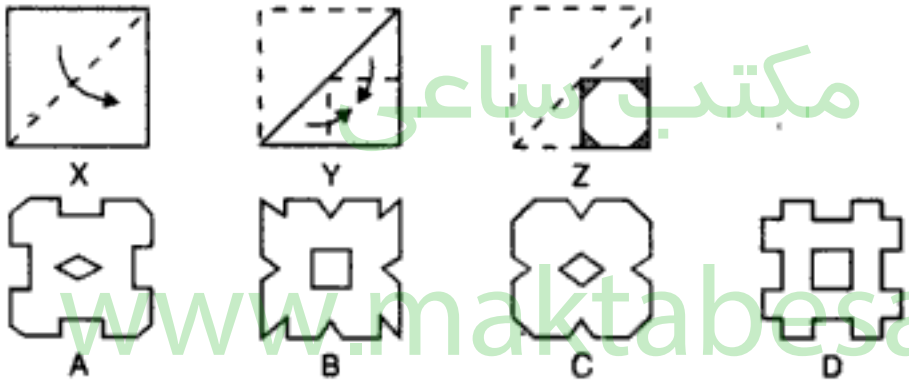
13. (Assistant Grade, 1994)



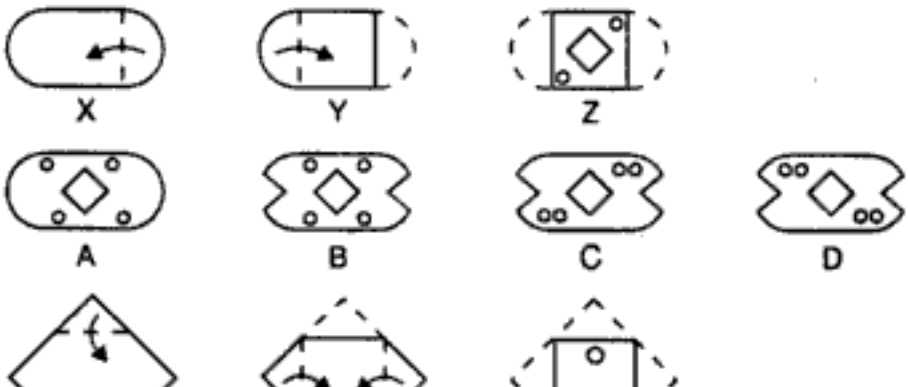
14.



15. (C.B.I. 1995)



16.



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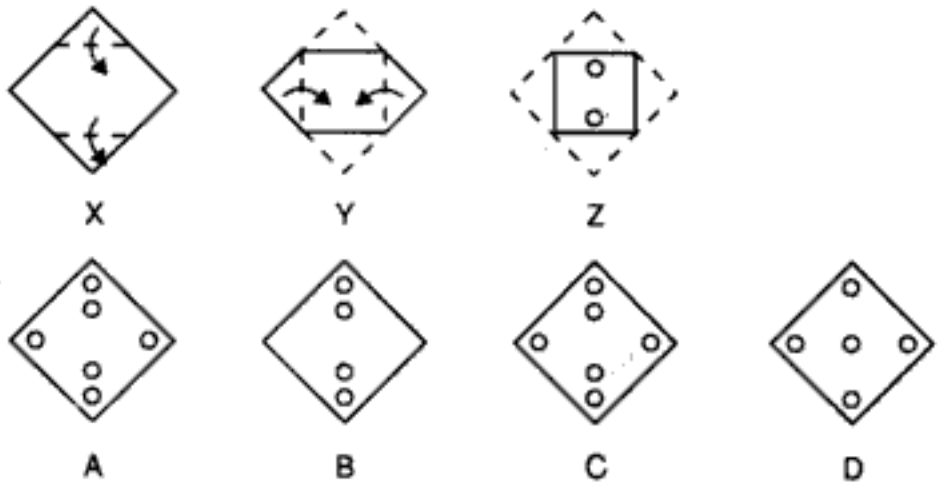

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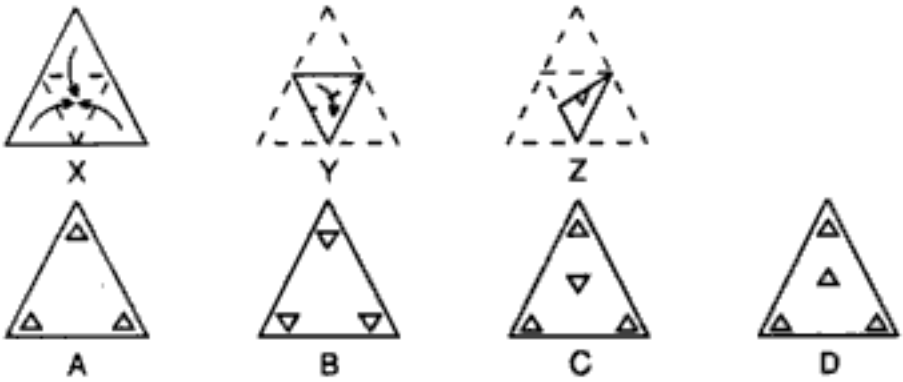

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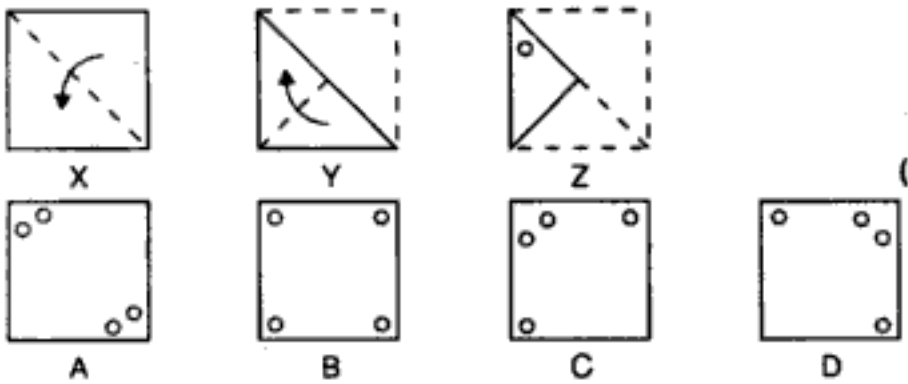

(Auditor's Exam, 1991)

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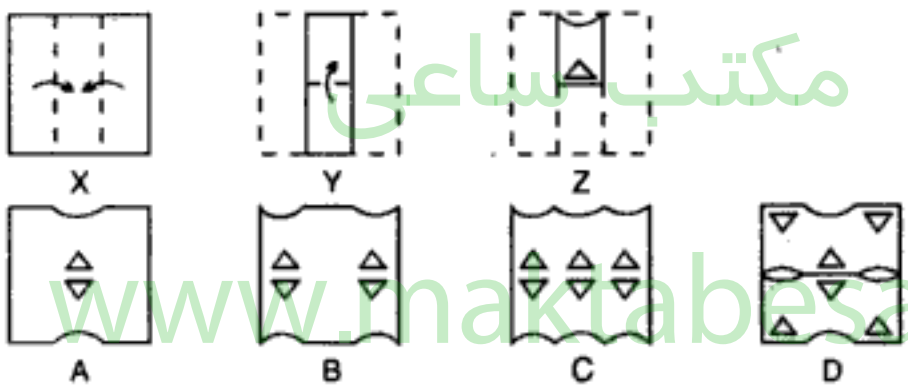
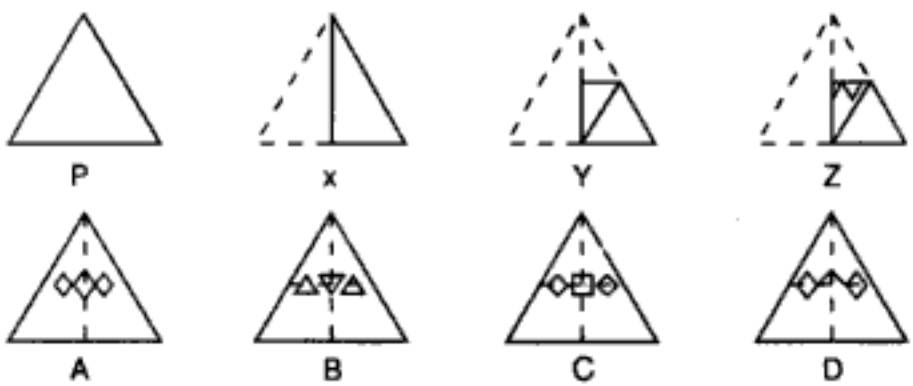
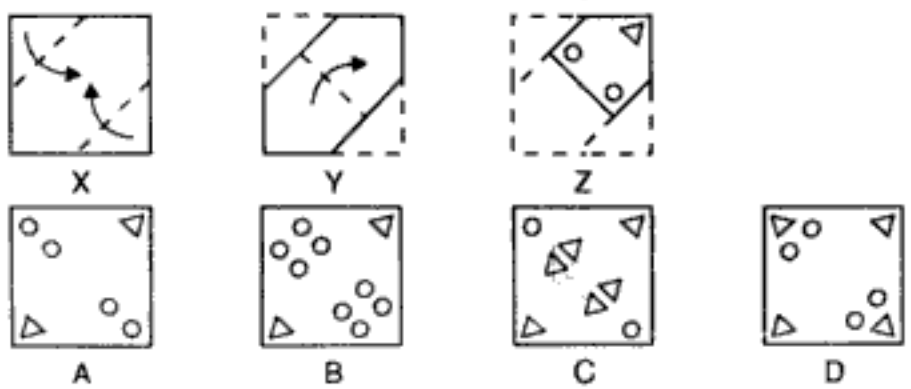


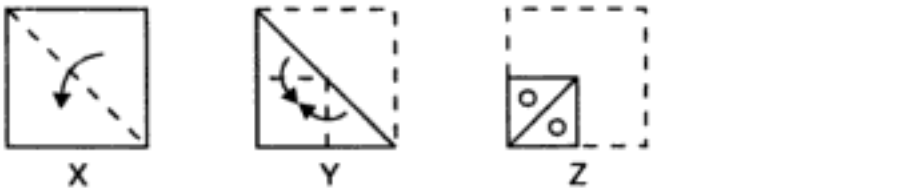
21.



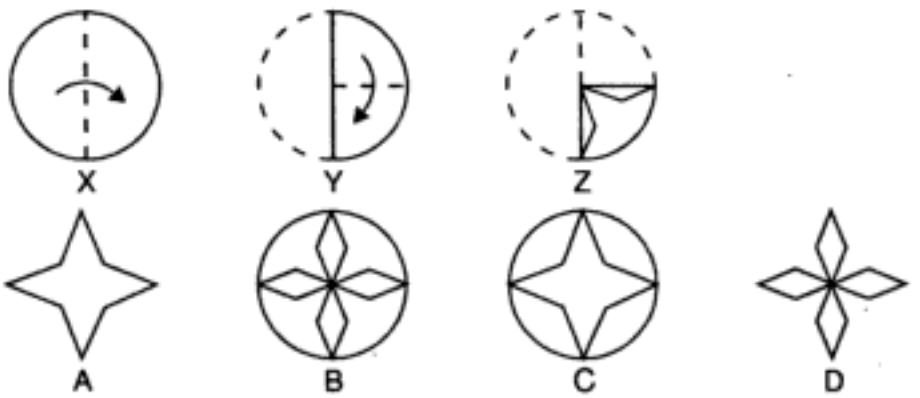
(U.D.C. 1991)

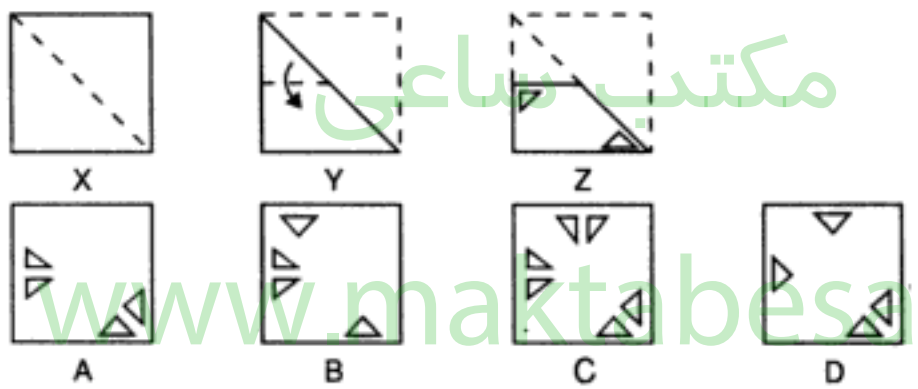
22.

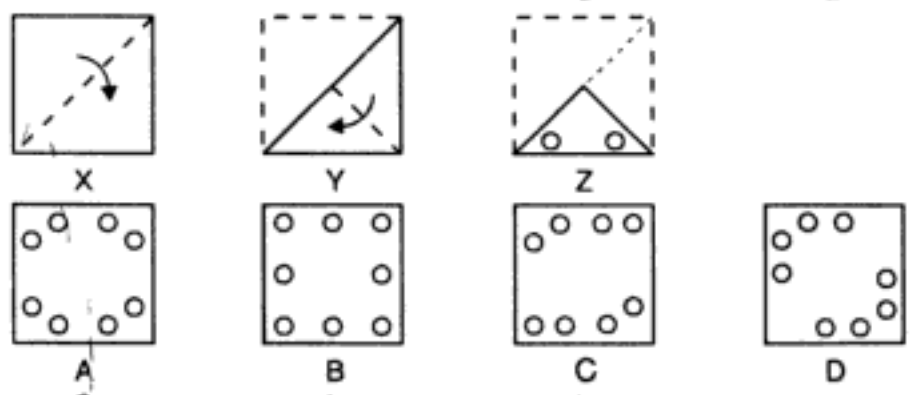


23. 

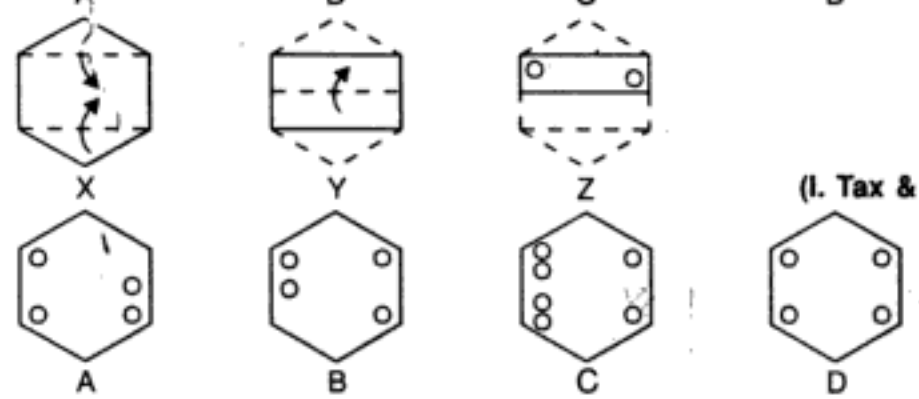
(S.S.C. 1992)

24. 

25. 

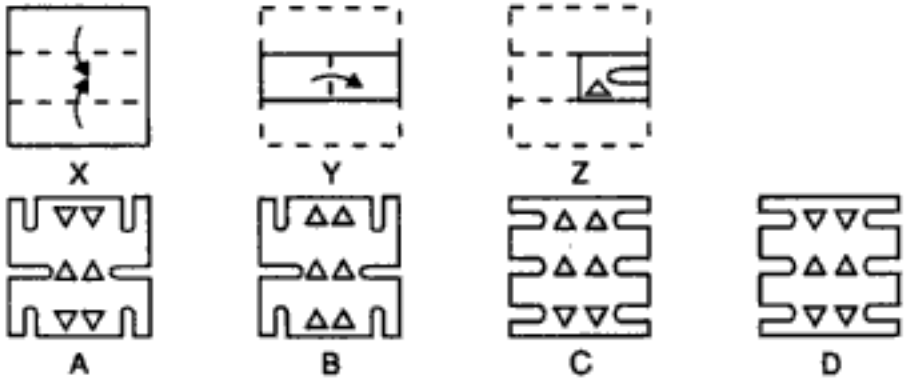
26. 

(U.D.C. 1991)

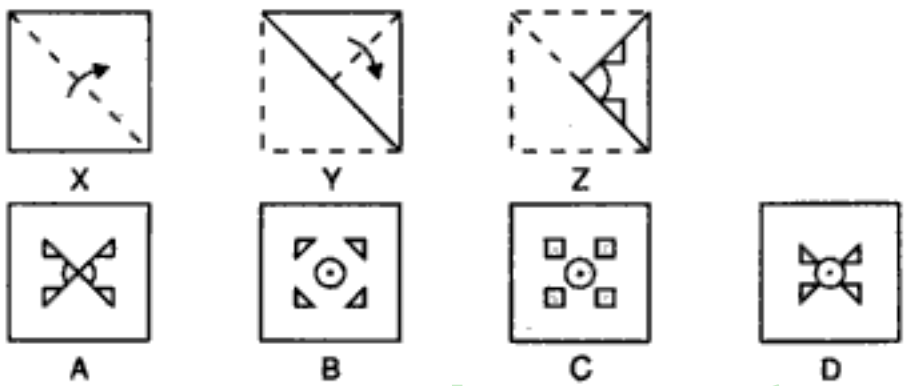
27. 

(I. Tax & Central Excise, 1990)

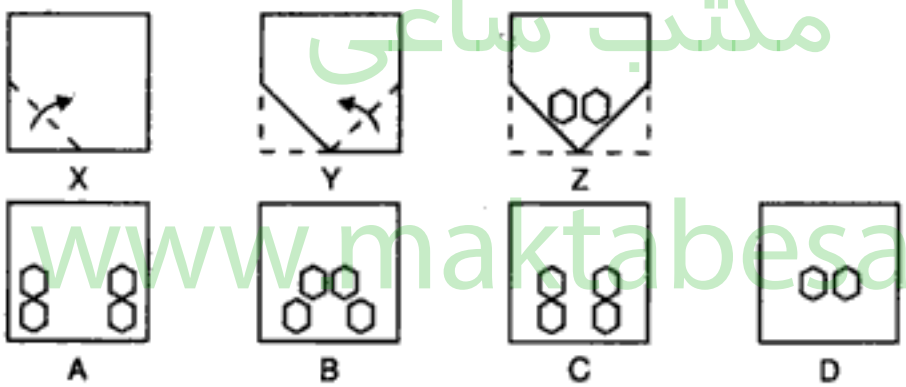
28.



29.

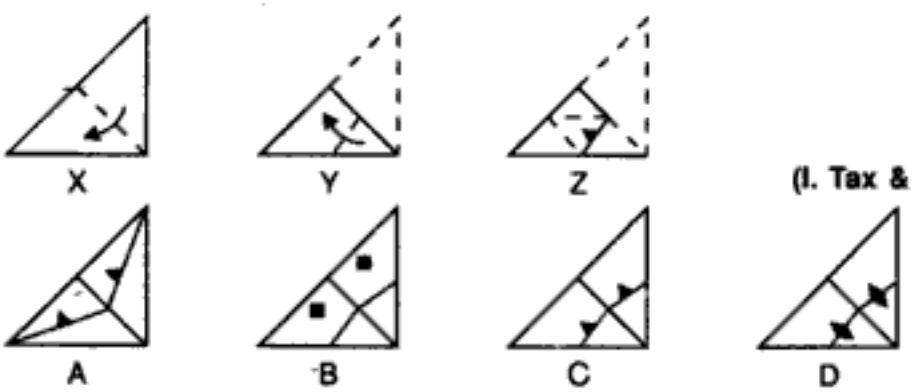


30.



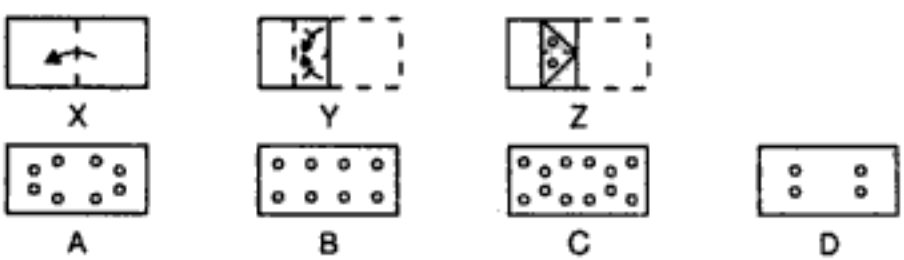
(C.B.I. 1989)

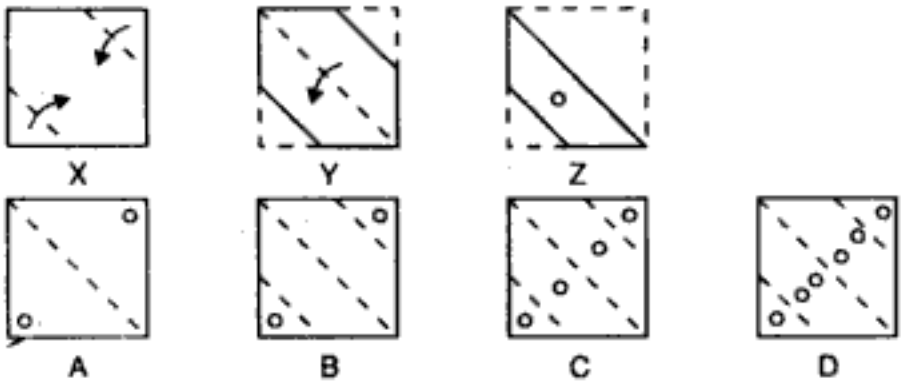
31.



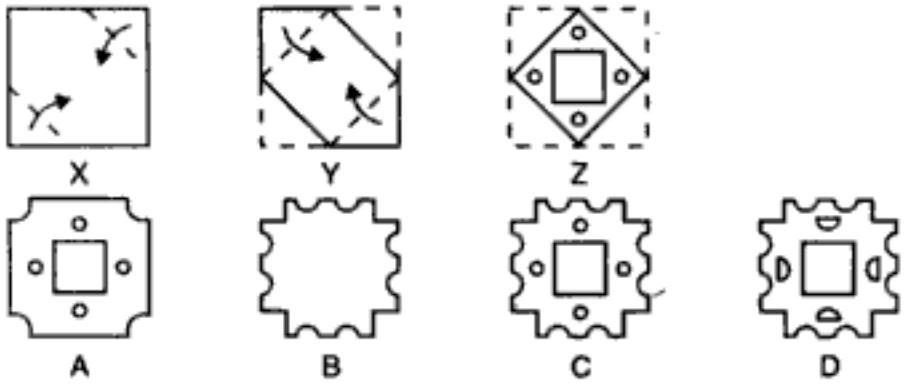
(I. Tax & Central Excise, 1993)

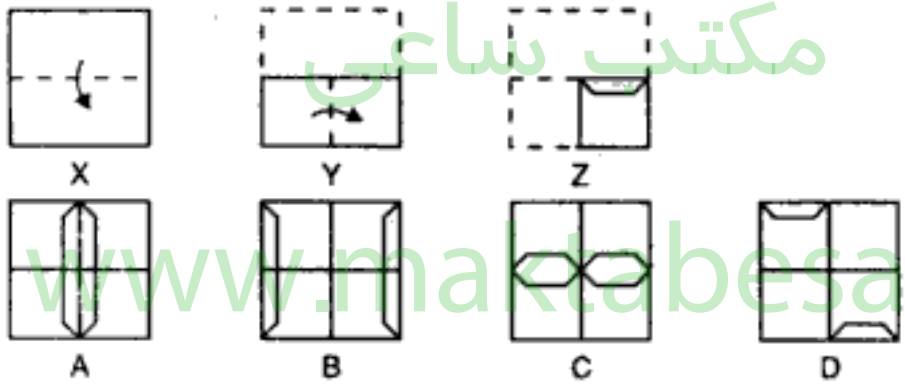
32.



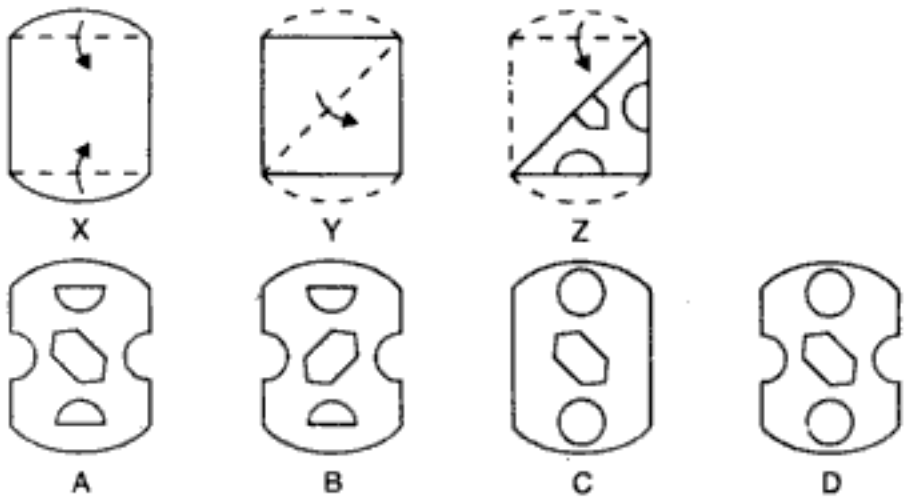
38. 

(S.S.C. 1995)

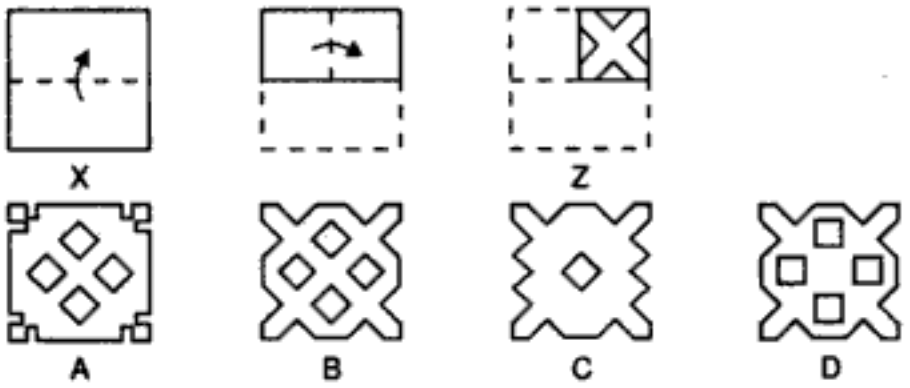
39. 

40. 

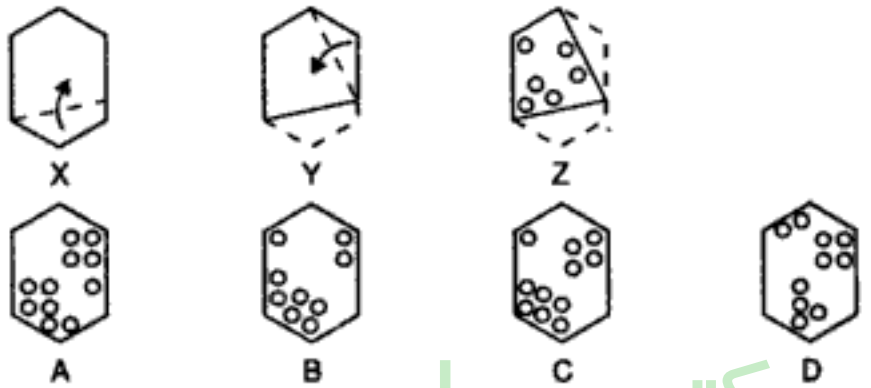
(Asstt. Grade, 1992)

41. 

42.

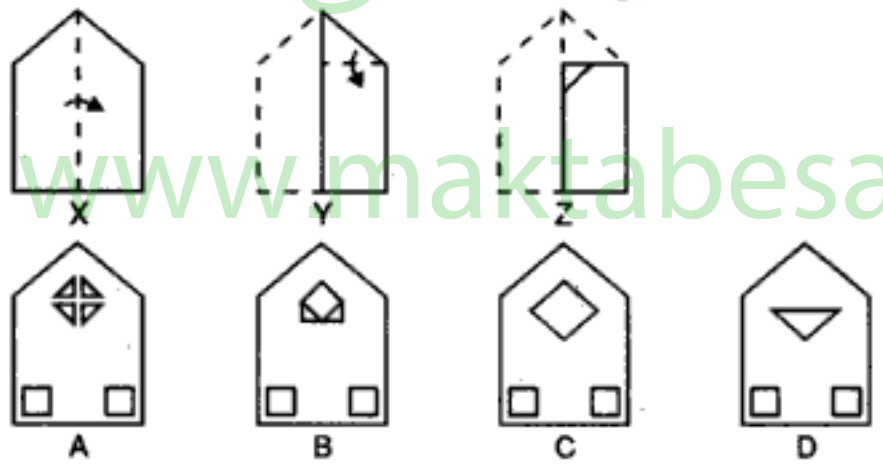


43.

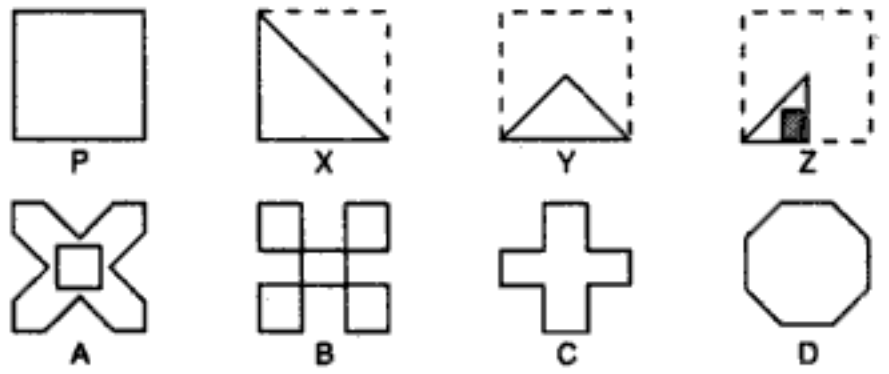


(U.D.C. 1995)

44.

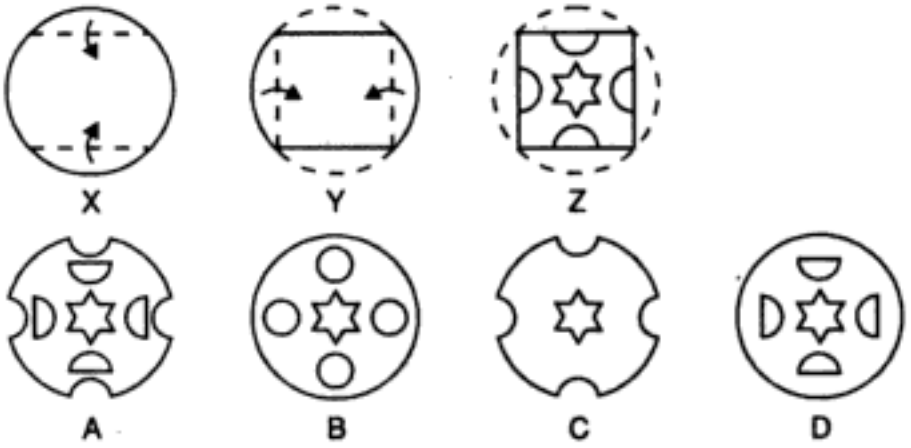


45.

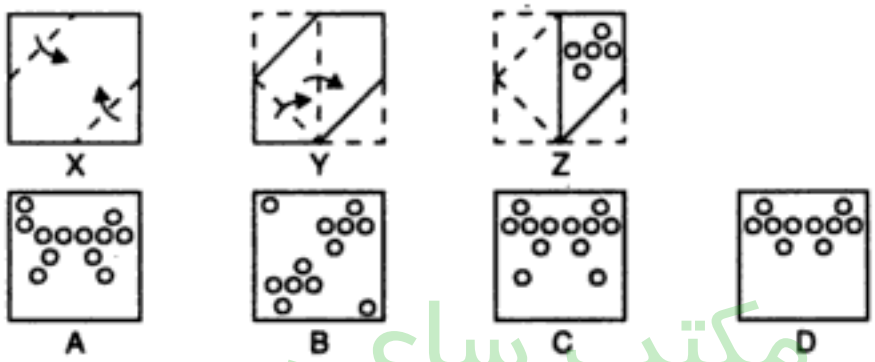


(Asstt. Grade, 1996)

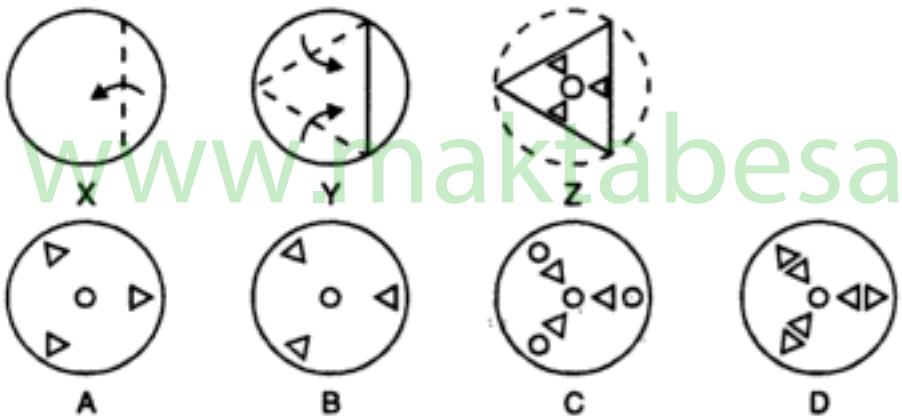
46.



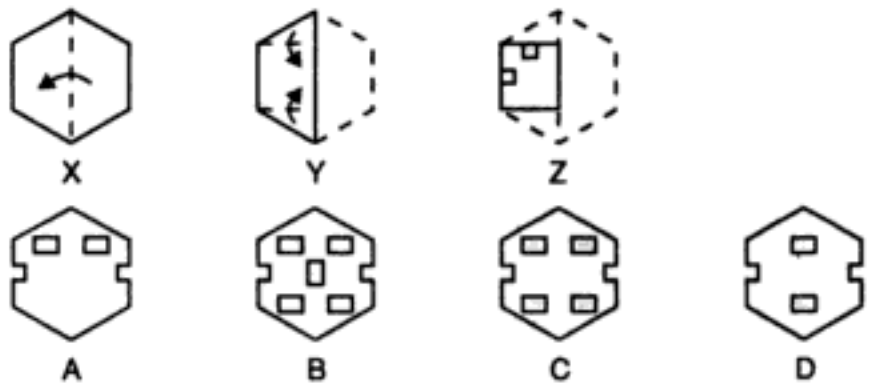
47. (U.D.C. 1995)



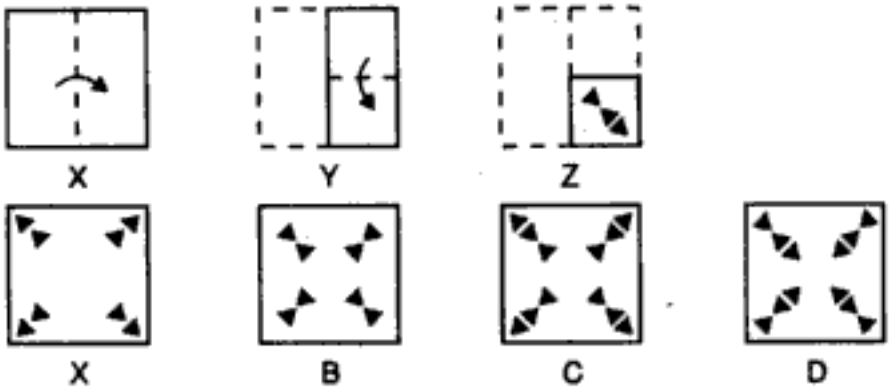
48.



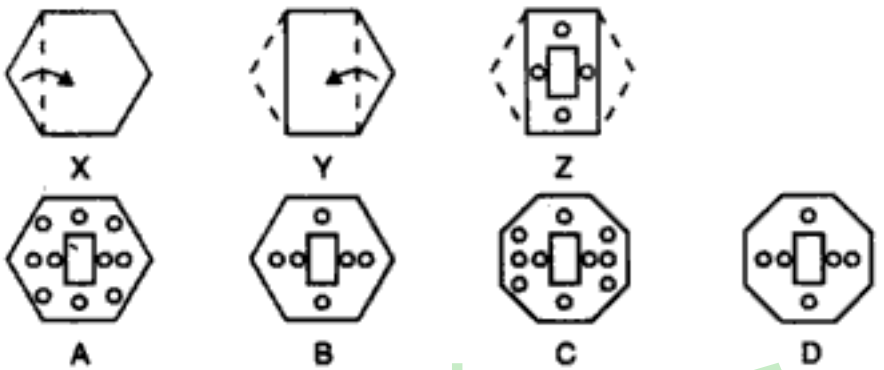
49.



54. (U.D.C. 1995)

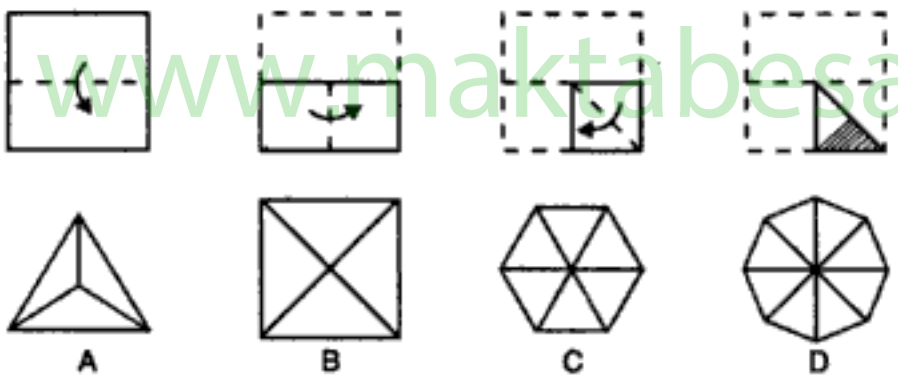


55.

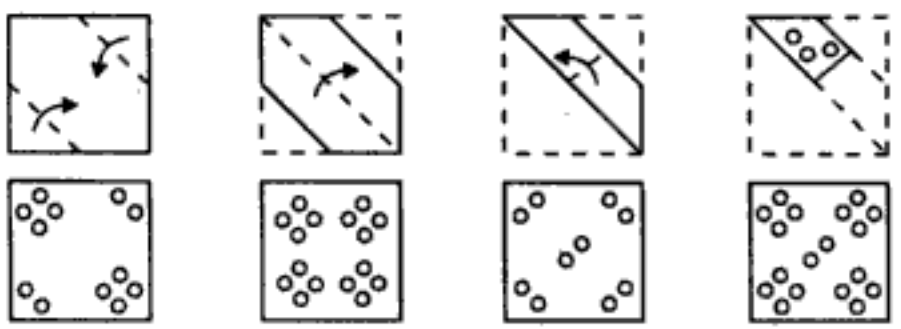


Directions : ***In questions 56 to 58, a piece of paper is folded, cut and then unfolded. One of the four alternative, figures, marked A, B, C and D, exactly resembles the unfolded paper. Select this figure.***

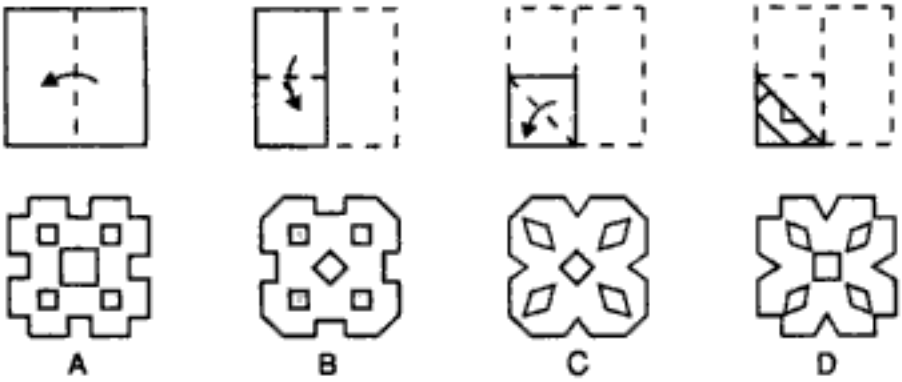
56.



57. (U.D.C. 1995)



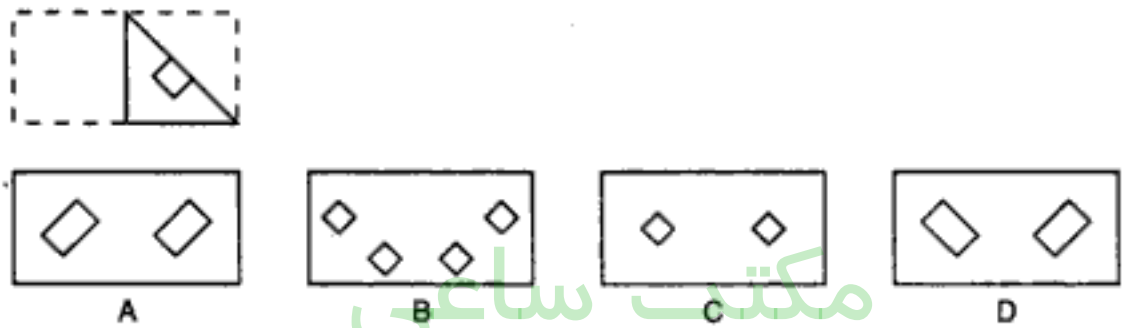
58.



A B C D

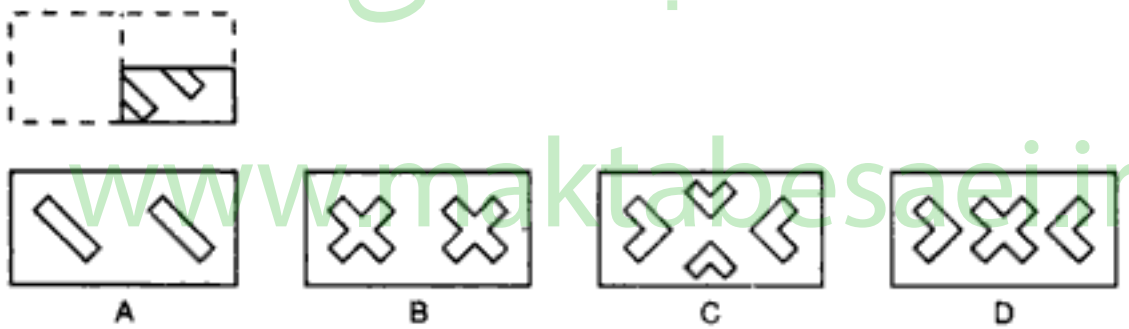
Directions : ***Each of the questions from 59 to 64 shows a sheet of paper when folded and then cut. This figure is followed by four alternatives figures, one of which resembles the sheet when unfolded and has to be selected.***

59.



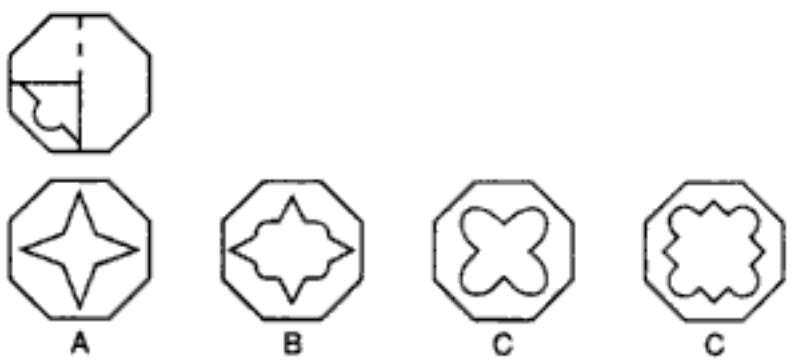
A B C D

60.



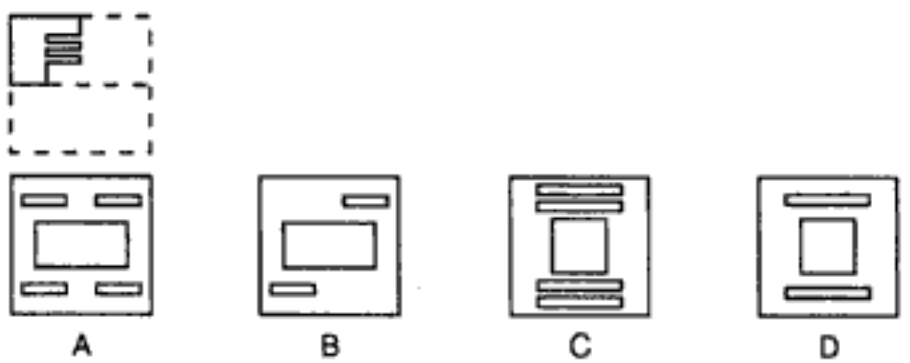
A B C D

61.



A B C C

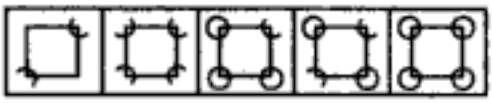
62.

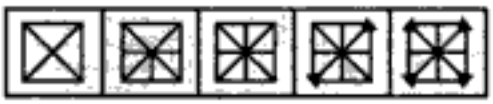


A B C D

9. Rule : *The series becomes complex as it proceeds.*

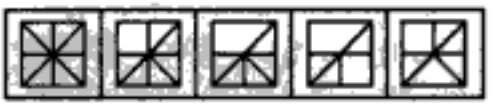
(A) 

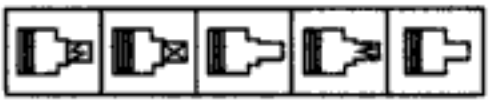
(B) 

(C) 

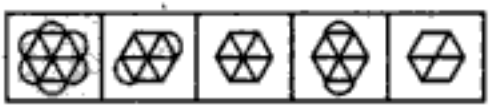
(D) 

11. Rule : *The series becomes simpler as it proceeds.*

(A) 

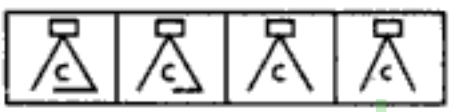
(B) 

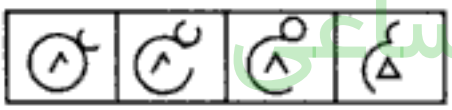
(C) 

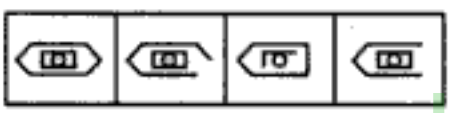
(D) 

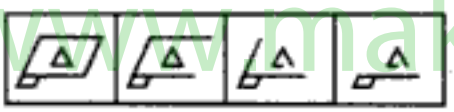
(Central Excise, 1992)

10. Rule : *Closed figures become more and more open and open figures more and more closed.*

(A) 

(B) 

(C) 

(D) 

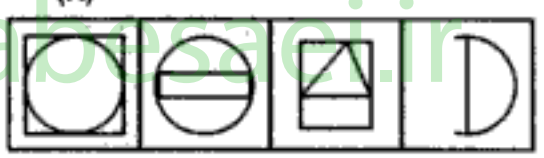
(I. Tax & Central Excise, 1993)

12. Which of the figures (A), (B), (C) & (D) will be the answer figure if the following rule is applied to figure (X)?

Rule : *The curves should become straight lines and the straight lines should become curves.*

(X)

(Asstt. Grade, 1995)



(A) (B) (C) (D)

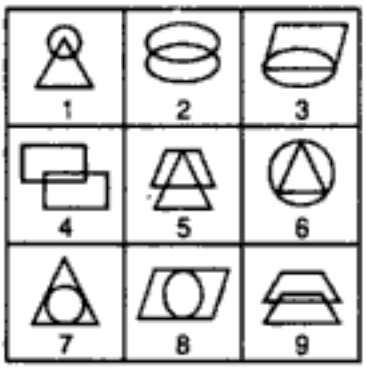
ANSWERS

1. (A)	**2.** (C)	**3.** (C)	**4.** (B)	**5.** (B)	**6.** (D)
7. (A)	**8.** (A)	**9.** (C)	**10.** (B)	**11.** (C)	**12.** (A)

13. GROUPING OF IDENTICAL FIGURES

In this type of questions, you are given a set of usually 6, 7 or 9 figures, which are numbered. The candidate is required to analyse these figures and classify them into groups consisting of figures having more or less the same properties.

Example : ***Group the following figures into three classes on the basis of identical properties.***



(*a*) 1, 5, 9; 2, 7, 8; 3, 4, 6
(*b*) 1, 5, 6; 4, 7, 8; 2, 3, 9
(*c*) 2, 4, 9; 6, 7, 8; 1, 3, 5
(*d*) 3, 7, 8; 4, 5, 9; 1, 2, 6

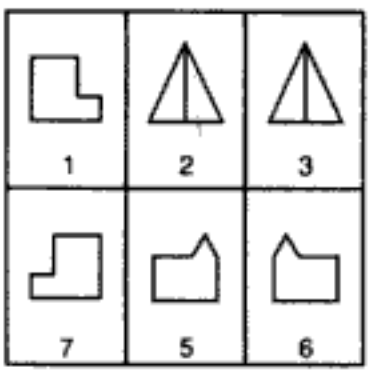
(Asstt. Grade, 1993)

Solution : Clearly, 1, 3, 5 are composed of two dissimilar figures intersecting each other.
2, 4, 9 are composed of two similar figures intersecting each other.
6, 7, 8 contain one figure enclosed inside the other.
Thus, the given nine figures may be divided into three pairs : (1, 3, 5), (2, 4, 9), (6, 7, 8).
Hence, the answer is (c).

EXERCISE 13

Directions : ***In each of the following questions, group the given figures into three classes using each figure only once.***

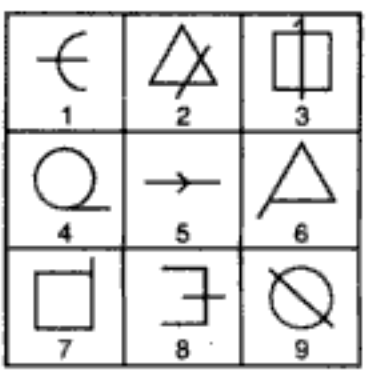
1.



(*a*) 1, 4; 2, 3; 5, 6
(*b*) 1, 5; 2, 6; 4, 3
(*c*) 1, 6; 2, 3; 4, 5
(*d*) 1, 2; 3, 6; 4, 4

(U.D.C. 1995)

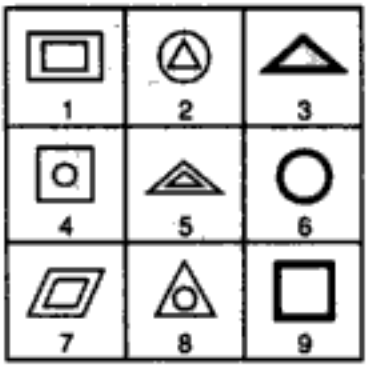
2.



(*a*) 1, 3, 9; 2, 5, 8; 4, 6, 7
(*b*) 4, 8, 9; 1, 2, 5; 3, 6, 7
(*c*) 2, 5, 9; 1, 3, 8; 2, 6, 7
(*d*) 1, 8, 9; 4, 6, 7; 2, 3, 5

(Central Excise, 1993)

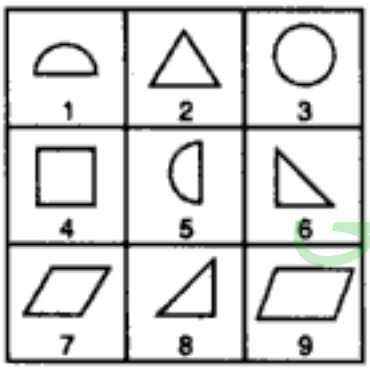
3.



(*a*) 1, 5, 7; 2, 4, 6; 3, 9, 8
(*b*) 1, 5, 7; 2, 4, 8; 3, 6, 9
(*c*) 1, 5, 7; 4, 9, 8; 2, 3, 6
(*d*) 1, 5, 7; 3, 8, 9; 2, 4, 6

(Assistant Grade, 1994)

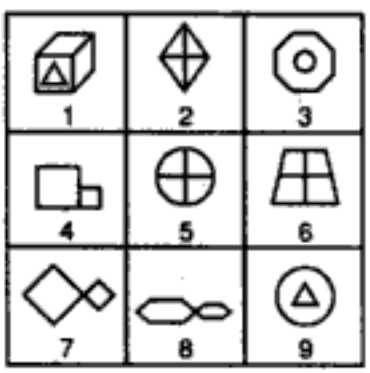
4.



(*a*) 1, 3, 5; 2, 6, 9; 4, 7, 8
(*b*) 2, 3, 4; 5, 6, 8; 9, 1, 7
(*c*) 1, 3, 5; 2, 6, 8; 4, 7, 9
(*d*) 3, 2, 4; 6, 5, 8; 7, 9, 1

(Central Excise, 1994)

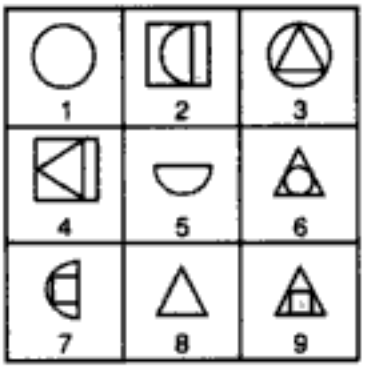
5.



(*a*) 1, 3, 9; 2, 5, 6; 4, 7, 8
(*b*) 1, 3, 9; 2, 7, 8; 4, 5, 6
(*c*) 1, 2, 4; 3, 5, 7; 6, 8, 9
(*d*) 1, 3, 6; 2, 4, 8; 5, 7, 9

(U.D.C. 1995)

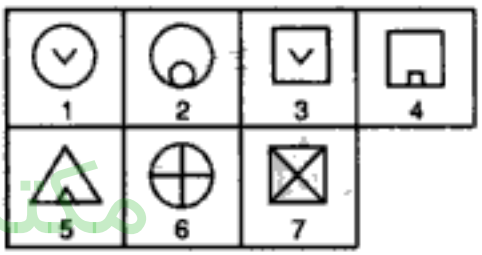
6.



(*a*) 1, 5, 8; 3, 4, 7; 2, 6, 9
(*b*) 1, 3, 6; 4, 5, 9; 2, 7, 8
(*c*) 1, 3, 6; 2, 5, 7; 4, 8, 9
(*d*) 6, 7, 8; 1, 3, 7; 2, 4, 9

(I. Tax & Central Excise, 1995)

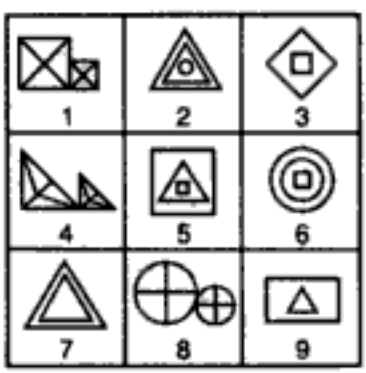
7.



(*a*) 1, 2, 6; 3, 4, 7; 5
(*b*) 1, 3; 2, 6; 4, 5, 7
(*c*) 1, 2, 6, 7; 3; 4, 5
(*d*) 1, 3; 2, 4, 5; 6, 7

(Asstt. Grade, 1994)

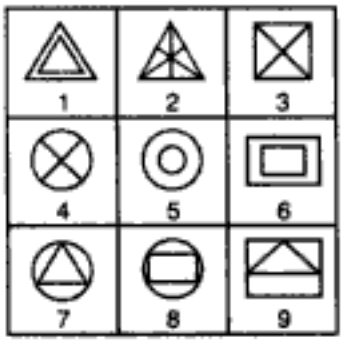
8.



(*a*) 1, 3, 7; 2, 4, 6; 5, 8, 9
(*b*) 1, 4, 6; 2, 5, 7; 3, 8, 9
(*c*) 1, 4, 8; 2, 5, 6; 3, 7, 9
(*d*) 1, 4, 8; 2, 7, 9; 3, 5, 6

(U.D.C. 1995)

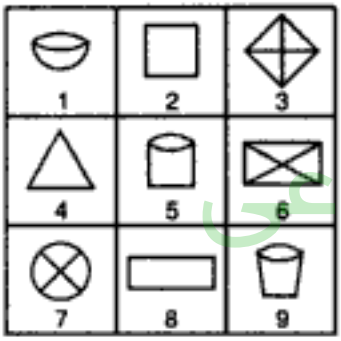
9.



(a) 1, 2, 3; 4, 5, 8; 6, 7, 9
(b) 1, 5, 6; 2, 3, 4; 7, 8, 9
(c) 1, 3, 5; 2, 4, 8; 6, 7, 9
(d) 1, 4, 7; 2, 5, 8; 3, 6, 9

(Assistant Grade, 1993)

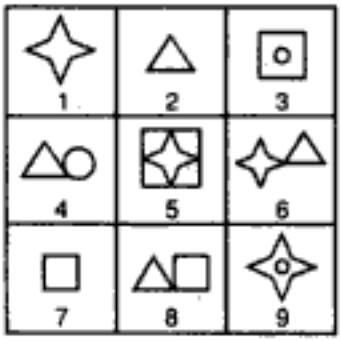
10.



(a) 1, 5, 9; 3, 6, 7; 2, 4, 8
(b) 2, 3, 6; 4, 8, 9; 1, 5, 7
(c) 3, 6, 8; 2, 4, 9; 1, 5, 7
(d) 2, 5, 8; 1, 7, 9; 3, 4, 6

(I. Tax & Central Excise, 1993)

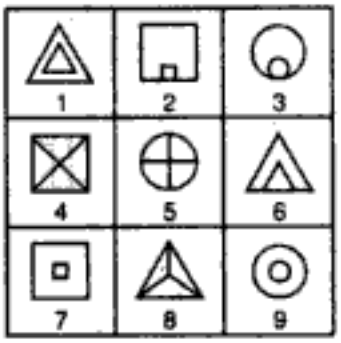
11.



(a) 3, 4, 9; 5, 7, 8; 1, 2, 6
(b) 1, 5, 6; 2, 4, 8; 3, 7, 9
(c) 4, 6, 8; 3, 5, 7; 1, 2, 9
(d) 1, 2, 7; 3, 5, 9; 4, 6, 8

(Assistant Grade, 1994)

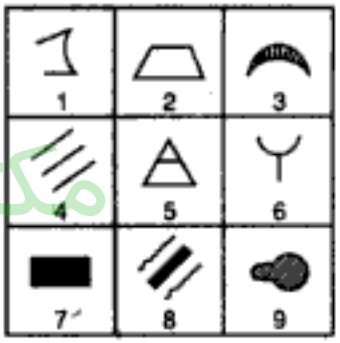
12.



(a) 1, 7, 9; 2, 3, 6; 4, 5, 8
(b) 1, 2, 9; 3, 4, 6; 5, 7, 8
(c) 1, 6, 8; 2, 4, 7; 3, 5, 9
(d) 1, 7, 8; 2, 9, 3; 6, 4, 5

(I. Tax & Central Excise, 1994)

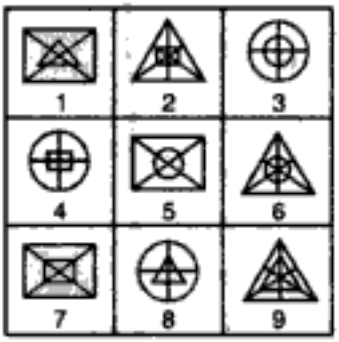
13.



(a) 1, 3, 6; 4, 5, 8; 2, 7, 9
(b) 2, 3, 9; 4, 5, 8; 1, 6, 7
(c) 1, 6, 8; 3, 7, 9; 2, 4, 5
(d) 3, 8, 9; 1, 2, 7; 4, 5, 6

(Asstt. Grade, 1994)

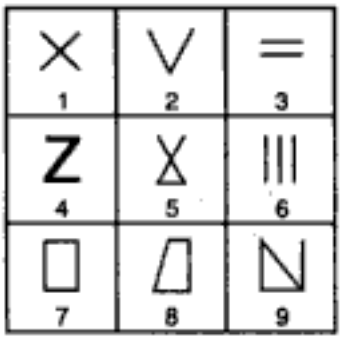
14.



(a) 2, 4, 7; 1, 8, 9; 3, 5, 6
(b) 2, 6, 9; 1, 5, 7; 3, 4, 8
(c) 2, 6, 7; 1, 5, 8; 3, 4, 9
(d) 2, 8, 7; 1, 5, 9; 3, 4, 6

(U.D.C. 1995)

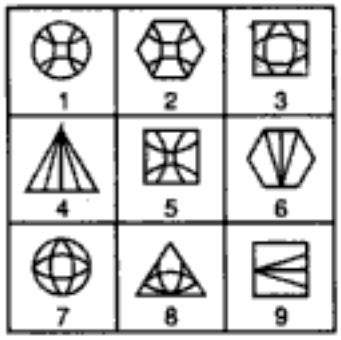
15.



(*a*) 1, 2, 3; 4, 5, 6; 7, 8, 9
(*b*) 1, 3, 5; 2, 4, 6; 7, 8, 9
(*c*) 1, 5, 9; 3, 6, 2; 4, 7, 8
(*d*) 1, 9, 7; 2, 8, 5; 3, 4, 6

(Central Excise, 1995)

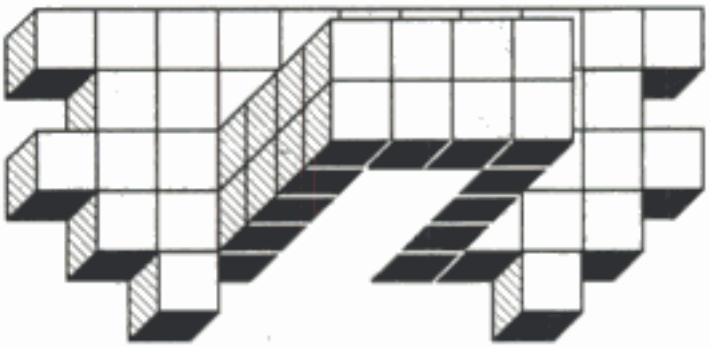
16.



(*a*) 1, 2, 5; 3, 7, 8; 4, 6, 9
(*b*) 1, 7, 2; 3, 9, 6; 4, 5, 8
(*c*) 2, 3, 8; 4, 6, 9; 1, 5, 7
(*d*) 5, 6, 9; 3, 4, 1; 2, 7, 8

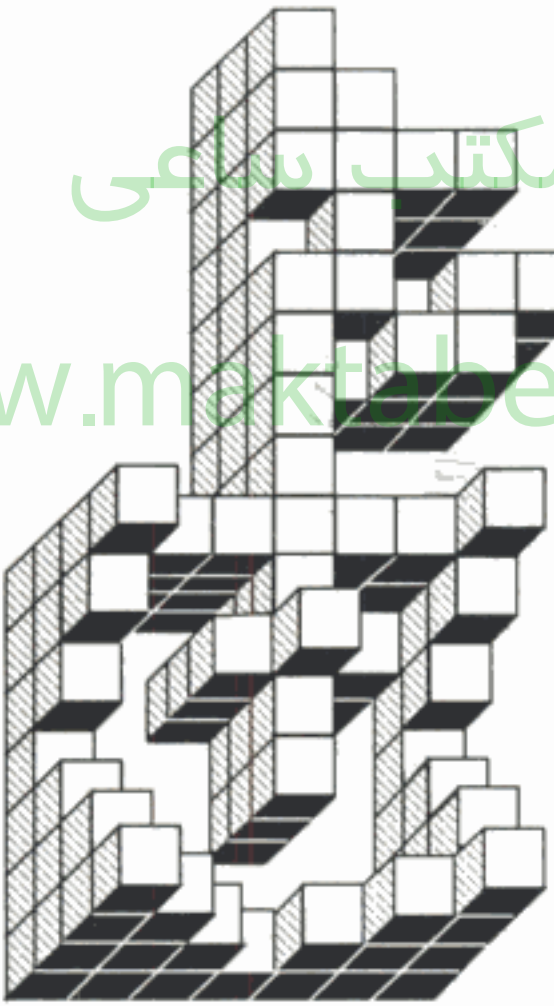
(Assistant Grade, 1994)

11.



(*a*) 57 (*b*) 58
(*c*) 60 (*d*) 62

12.



(*a*) 130 (*b*) 132
(*c*) 138 (*d*) 140

1. (*d*) : There are four cubes in the middle layer which have one face painted only in blue.
2. (*b*) : There is one (central) cube in the top layer and one (central) cube in the bottom layer which have one face painted only in Green.
3. (*c*) : There are 9 cubes in each of the three layers. Thus there are 27 cubes in all.
4. (*a*) : Four (corner) cubes in the top layer and four (corner) cubes in the bottom layer have three sides painted. Hence, there are 8 such cubes.
5. (*e*) : Only one central cube in the middle layer has no faces painted at all.

EXERCISE 14B

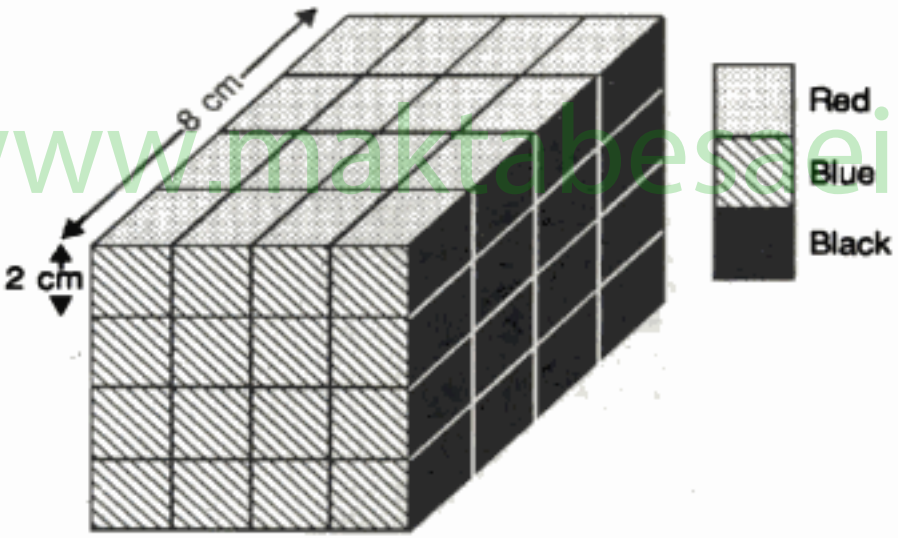
Q. 1. Directions : ***A cube painted yellow on all faces is cut into 27 small cubes of equal sizes. Answer the questions that follow :***

(1) How many cubes are painted on one face only ?
(*a*) 1 (*b*) 6 (*c*) 8 (*d*) 12

(2) How many cubes are not painted on any face ?
(*a*) 1 (*b*) 4 (*c*) 6 (*d*) 8

Q. 2. All surfaces of a cube are coloured. If a number of smaller cubes are taken out from it, each side 1/4th size of the original cube's side, indicate the number of cubes with only one side painted :
(*a*) 16 (*b*) 20 (*c*) 24 (*d*) 40

Q. 3. Directions : ***A solid cube of each side 8 cms, has been painted red, blue and black on pairs of opposite faces. It is then cut into cubical blocks of each side 2 cms.***



(1) How many cubes have no face painted ?
(*a*) 0 (*b*) 4 (*c*) 8 (*d*) 12

(2) How many cubes have only one face painted ?
(*a*) 8 (*b*) 16 (*c*) 24 (*d*) 28

(3) How many cubes have only two faces painted ?
(*a*) 8 (*b*) 16 (*c*) 20 (*d*) 24

(4) How many cubes have three faces painted ?
(*a*) 0 (*b*) 4 (*c*) 6 (*d*) 8

(5) How many cubes have three faces painted with different colours ?
(*a*) 0 (*b*) 4 (*c*) 8 (*d*) 12

(6) How many cubes have two faces painted red and black and all other faces unpainted ?

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(a) 4 (b) 8 (c) 16 (d) 24

(5) How many cubes have one face green and one of the adjacent faces black or red ?
(a) 8 (b) 16 (c) 24 (d) 28

Q.7. Directions : ***The six faces of a cube are coloured black, brown, green, red, white and blue, such that***

(i) Red is opposite bleak
(ii) Green is between red and black
(iii) Blue is adjacent to white
(iv) Brown is adjacent to blue
(v) Red is at the bottam.

Answer the following questions based on this information **(U.D.C. 1995)**

(1) Which colour is opposite brown ?
(a) White (b) Red (c) Green (d) Blue

(2) The four adjacent colours are
(a) Black, Blue, Brown, Red (b) Black, Blue, Brown, White
(c) Black, Blue, Red, White (d) Black, Brown, Red, White

(3) Which of the following can be deduced from (*i*) and (*v*) ?
(a) Black is on the top (b) Blue is on the top
(c) Brown is on the top (d) Brown is opposite Black

Q.8. Directions : ***A cube is painted blue on all faces is cut into 125 cubes of equal size. Now, answer the follwing questions :*** **(M.B.A. 1994)**

(1) How many cubes are not painted on any face ?
(a) 8 (b) 16 (c) 18 (d) 27 (e) 54

(2) How many cubes are painted on one face only ?
(a) 8 (b) 16 (c) 36 (d) 54 (e) None of these

Q.9. Directions : ***A cube is coloured orange on one face, pink on the opposite face, brown on one face and silver on a face adjacent to the brown face. The other two faces are left uncoloured. It is then cut into 125 smaller cubes of equal size. Now, answer the following questions based on the above statments :***

(1) How many cubes have at least one face coloured pink ?
(a) 1 (b) 9 (c) 16 (d) 25

(2) How many cubes have all the faces uncoloured ?
(a) 24 (b) 36 (c) 48 (d) 64

(3) How many cubes have at least two faces coloured ?
(a) 19 (b) 20 (c) 21 (d) 23

(4) How many cubes are coloured orange on one face and have the remaining faces uncoloured ?
(a) 8 (b) 12 (c) 14 (d) 16

(5) How many cubes one coloured silver on one face, orange or pink on another face and have four uncoloured faces ?
(a) 8 (b) 10 (c) 12 (d) 16

Q.10. Directions : ***The length of each side of a cube is 5cms. The outer border of the width of 1 cm is painted yellow on each side and the remaining space enclosed by this 1 cm. path, is painted pink. This cube is cut into 125 smaller cubes of each side 1 cm. When these smaller cubes are separated :***

(1) How many cubes have all the faces uncoloured ?
(a) 0 (b) 9 (c) 18 (d) 27

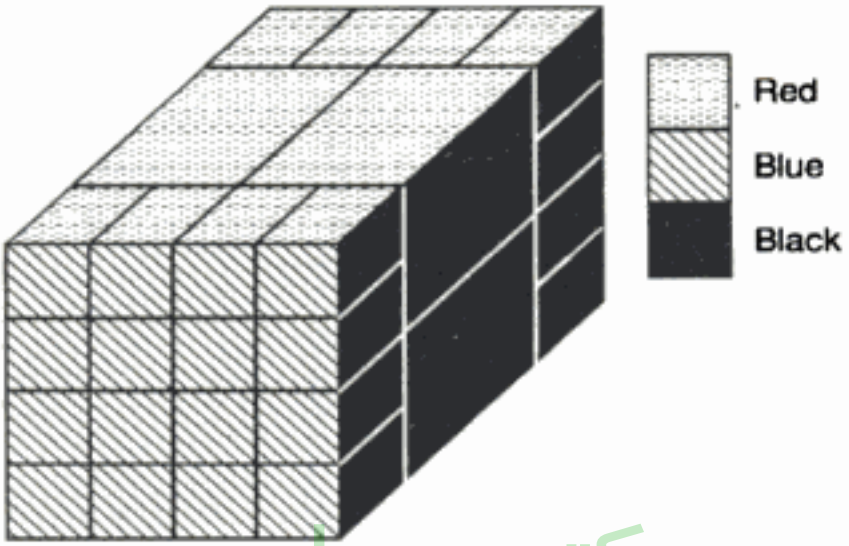
(2) How many cubes have three faces coloured yellow ?
(a) 2 (b) 4 (c) 8 (d) 10

(3) How many cubes have at least two faces coloured yellow ?
(a) 24 (b) 44 (c) 48 (d) 96

(4) How many cubes have one face pink and an adjacent face yellow ?
(a) 0 (b) 1 (c) 2 (d) 4

(5) How many cubes have at least one face coloured ?
(a) 27 (b) 48 (c) 98 (d) 121

Q.11. Directions : ***A solid cube has been painted yellow, blue and black on pairs of opposite faces. The cube is then cut into 36 smaller cubes such that 32 cubes are of the same size while 4 others are of bigger size. Also no face of any of the bigger cubes is painted blue.***



(1) How many cubes have at least one face painted blue ?
(a) 0 (b) 8 (c) 16 (d) 32

(2) How many cubes have only one face painted ?
(a) 0 (b) 4 (c) 8 (d) 12

(3) How many cubes have only two faces painted ?
(a) 24 (b) 20 (c) 16 (d) 8

(4) How many cubes have two or more faces painted ?
(a) 36 (b) 34 (c) 28 (d) 24

(5) How many cubes have only three faces painted ?
(a) 8 (b) 4 (c) 2 (d) 0

(6) How many cubes do not have any of their faces painted yellow ?
(a) 0 (b) 4 (c) 8 (d) 16

(7) How many cubes have at least one of their faces painted black ?
(a) 0 (b) 8 (c) 16 (d) 20

(8) How many cubes have at least one of their faces painted yellow or blue ?
(a) 36 (b) 32 (c) 16 (d) 0

(9) How many cubes have no face painted ?
(a) 8 (b) 4 (c) 1 (d) 0

(10) How many cubes have two faces painted yellow and black respectively ?
(a) 0 (b) 8 (c) 12 (d) 16

Q.12. Directions : ***A cube is coloured Red on two opposite faces, Blue on two adjacent faces and Yellow on the two remaining faces. It is then cut into two halves along the plane parallel to the Red faces. One piece is then cut into four equal cubes and the other one into 32 equal cubes. Now answer the following questions based on the above statement :*** **(Hotel Management, 1995)**

(1) How many cubes do not have any coloured face ?
(a) 0 (b) 2 (c) 4 (d) 8

(2) How many cubes do not have any Red face ?

(a) 8 (b) 16 (c) 20 (d) 24

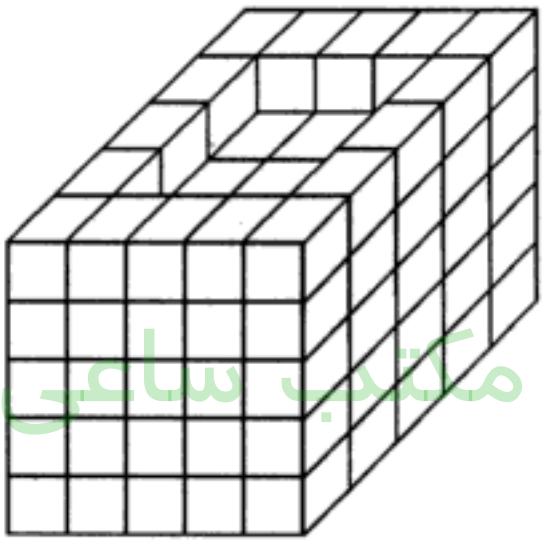
(3) How many cubes have at least two coloured faces ?
(a) 20 (b) 24 (c) 28 (d) 32

(4) How many cubes have each a Yellow face with other faces blank ?
(a) 4 (b) 14 (c) 16 (d) 17

(5) How many cubes have at least one Blue face ?
(a) 4 (b) 14 (c) 16 (d) 20

Q.13. Directions : ***A cube is painted red on two adjacent faces and on one opposite face, yellow on two opposite faces and green on the remaining face. It is then cut into 64 equal cubes.***

How many cubes have only one red coloured face ? **(S.S.C. 1993)**
(a) 4 (b) 8 (c) 12 (d) 16



Q.14. Directions : ***Some equal cubes are arranged in the form of a solid block as shown in the adjoining figure. All the visible surfaces of the block (except the bottom) are then painted.***

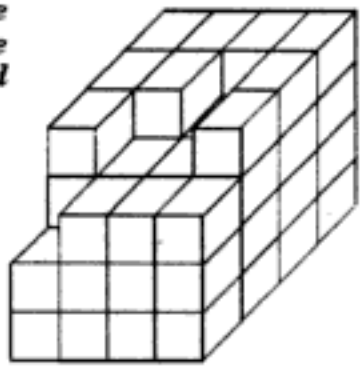
(1) How many cubes do not have any of the faces painted ?
(a) 27 (b) 32 (c) 36 (d) 40

(2) How many cubes have only one face painted ?
(a) 9 (b) 45 (c) 57 (d) 62

(3) How many cubes have only two faces painted ?
(a) 0 (b) 16 (c) 20 (d) 24

(4) How many cubes have only three faces painted ?
(a) 4 (b) 12 (c) 16 (d) 20

Q.15. Directions : ***A solid black is formed by arranging some cubes of equal dimensions, as shown in the adjoining figure. Whole of the block except the base has been coloured pink. Answer the questions based upon this information :***



(1) How many cubes have four faces coloured ?
(a) 0 (b) 1 (c) 2 (d) 3

(2) How many cubes have exactly three faces coloured ?
(a) 2 (b) 4 (c) 8 (d) 11

(3) How many cubes have exactly two faces coloured ?
(a) 9 (b) 11 (c) 13 (d) 15

(4) How many cubes have only one face coloured ?
(a) 22 (b) 24 (c) 25 (d) 27

(5) How many cubes are not coloured on any face ?
(*a*) 6 (*b*) 8 (*c*) 9 (*d*) 11

Q.16. The minimum number of colours required to paint all the sides of a cube that no two adjacent faces may have the same colours, is : **(M.B.A. 1994)**
(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4 (*e* 6

Q.17. Directions : ***Three adjacent faces of a cube are coloured blue. The cube is then cut (once horizontally and once vertically to form four cuboids of equal size each of these cuboids is coloured pink on all the uncoloured faces and is then cut (as before) into four cuboids of equal size.***

(1) How many cuboids have two faces coloured pink ?
(*a*) 1 (*b*) 3 (*c*) 4 (*d*) 6

(2) How many cuboids have three faces coloured pink ?
(*a*) 9 (*b*) 7 (*c*) 5 (*d*) 3

(3) How many cuboids have three faces coloured blue ?
(*a*) 4 (*b*) 2 (*c*) 1 (*d*) 0

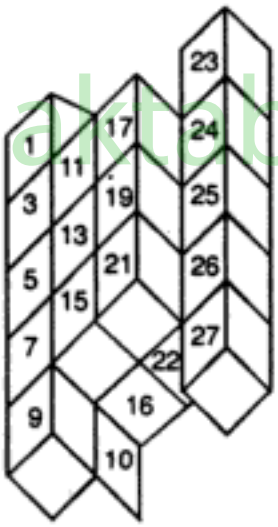
Q.18. Directions : ***In the adjoining figure there are 27 cubes numbered from 1 to 27. Answer the questions that folow :***

(1) Number of cubes which have maximum number of faces touching the other cubes is :
(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4

(2) Number of cubes which have minimum number of faces touching the other cubes is :
(*a*) 1 (*b*) 2 (*c*) 4 (*d*) 6

(3) Which of the cubes 3, 8, 20 or 27 touches the maximum number of cubes ?
(*a*) 3 (*b*) 8 (*c*) 20 (*d*) 27

(4) Which of the cubes 6, 13, 19 or 25 touches maximum number of cubes ?
(*a*) 6 (*b*) 13 (*c*) 19 (*d*) 25



(5) Which of the cubes 7, 21, 22, or 23 touches minimum number of cubes ?
(*a*) 7 (*b*) 21 (*c*) 22 (*d*) 23

(6) What cube is hidden under cube 19 ?
(*a*) 18 (*b*) 20 (*c*) 24 (*d*) 25

(7) What cube is hidden under cube 13 ?
(*a*) 5 (*b*) 14 (*c*) 15 (*d*) 19

(8) How many cubes are hidden and so could not be numbered ?
(*a*) 8 (*b*) 6 (*c*) 5 (*d*) 4

(9) How many cubes have their faces touching four other cubes ?
(*a*) 9 (*b*) 10 (*c*) 12 (*d*) 13

(10) The cubes having their five faces touching other cubes are :
(*a*) 7, 14, 20 (*b*) 13, 14, 20 (*c*) 13, 18. 22 (*d*) 13, 14, 18, 20, 22

3. (*d*) : There are 8 cubes in layer I, 4 cubes in layer II, 4 cubes in layer III and 8 cubes in layer IV which have only two faces painted. Thus, there are 8 + 4 + 4 + 8 = 24 such cubes.

4. (*d*) : Four corner cubes in layer I and four corner cubes in layer IV have three faces painted. Thus, there are 8 such cubes.

5. (*c*) : Four corner cubes in layer I and four corner cubes in layer IV have three faces painted with different colours. Thus, there are 8 such cubes.

6. (*b*) : There are four cubes in layer I and four cubes in layer IV which have two faces painted red and black and all other faces unpainted. Thus, there are 8 such cubes.

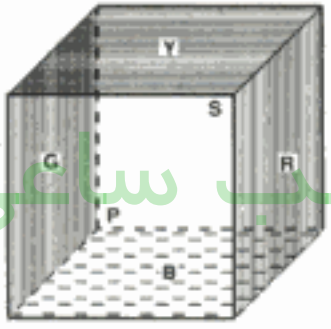
7. (*b*) : There are four cubes in layer I and four cubes in layer IV which have only one face painted red and all other faces unpainted. Thus, there are 8 such cubes.

8. (*d*) : There can be no cube which has two of its faces both painted with the same colour.

9. (*a*) : There are 4 + 4 = 8 cubes in layer I and 4 + 4 = 8 cubes in layer IV which have one face painted blue and one face painted red. Thus, there are 16 such cubes.

10. (*a*) : There are four layers of 16 cubes each. Thus, there are 16 × 4 = 64 cubes in all.

Sol. 4 : On the basis of the given details, the cube will be painted as indicated in the following figure.



Here 'Y' stands for Yellow ; 'R' for Red ; 'B' for Brown ; 'G' for Green ; 'P' for Pink and 'S' for Silver. The colour of each face is indicated at the centre of each face.

1. (*b*) : The face opposite to Red is Green.

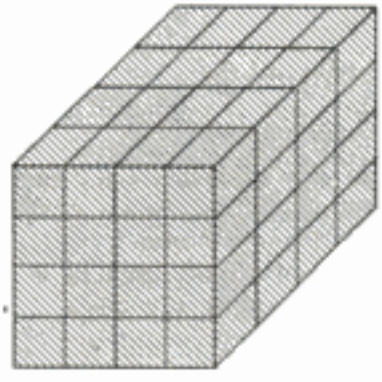
2. (*c*) : The upper face is painted yellow.

3. (*d*) : Clearly, the faces adjacent to Green are Pink, Silver, Yellow and Brown.

4. (*a*) : Clearly, the face oppoiste to silver is Pink.

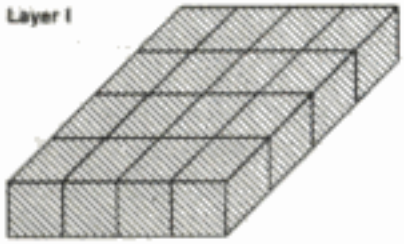
5. (*b*) : The faces adjacent to Red face are Silver, Pink, Brown and Yellow.

Sol. 5 : The given figure shows the cube coloured red on all faces, and divided into 64 smaller cubes :

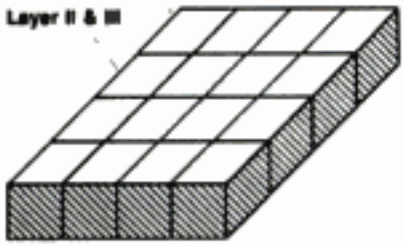


The figure may be analysed by dividing it into four horizontal layers :

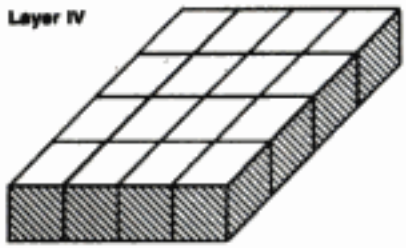
In layer I; the four central cubes have only one face coloured four cubes at the corner have three faces coloured and the remaining 8 cubes have two faces coloured.



In each of the layers II & III, the four central cubes have no face coloured, the four cubes at the corner have two faces coloured and the remaining 8 cubes have only one face coloured.



In layer IV, the four central cubes have only one face coloured, four cubes at the corner have three faces coloured and the remaining 8 cubes have two faces coloured.



1. (*c*) : Four central cubes in layer II and four central cubes in layer III have no face coloured. Thus there are 8 such cubes.

2. (*d*) : Four central cubes in layer I, 8 cubes in layer II, 8 cubes in layer III and four central cubes in layer IV have only one face coloured. Thus, there are 4 + 8 + 8 + 4 = 24 such cubes.

3. (*a*) : None of the cubes can have its opposite faces coloured.

4. (*c*) : Four corner cubes in layer I and four corner cubes in layer IV have three faces coloured. Thus, there are 8 such cubes.

Sol. 6 : The figure analysis is the same as in the solution of **Q. 3.**

1. (*c*) : There are 8 cubes having no face painted.

2. (*c*) : There are 24 cubes having only one face painted.

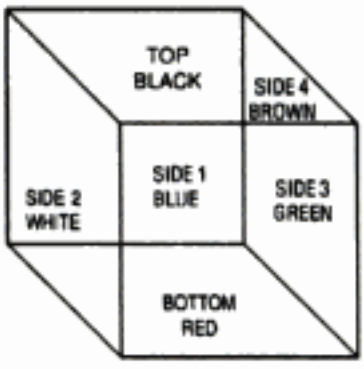
3. (*d*) : There are 24 cubes having only one face painted and 24 cubes having only two faces painted.

Thus, there are 24 + 24 = 48 cubes having less than three faces painted.

4. (*b*) : There are 8 cubes having three faces painted.

5. (*c*) : In **Q. 3.** substitute blue colour by green colour. 8 cubes in layer I, 4 cubes in layer II, 4 cubes in layer III and 8 cubes in layer IV have one face green and one of the adjacent faces black or red. Thus there are 8 + 4 + 4 + 8 = 24 such cubes.

Sol. 7 : On the basis of the given details, the cube will be coloured as indicated in the figure shown.

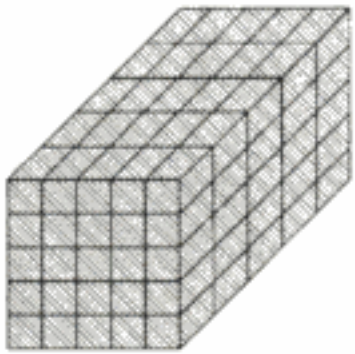


1. (*a*) : As is clear from the figure side 4 is coloured brown and opposite to it lies the side 2 which is coloured white. Therefore, white colour is opposite brown.

2. (*d*) : Black, Brown, Red, White are adjacent colours which lie respectively on top, side 4, bottom and side 2.

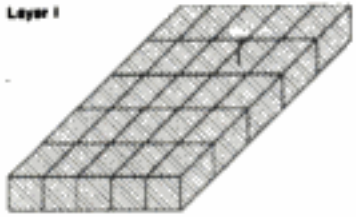
3. (*a*) : Red is opposite Black, and Red is at the bottom implies 'Black is on the top'.

Sol. 8. : The following figure shows the cubes painted blue on all face and divided into 125 smaller cubes :

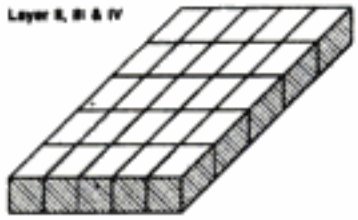


The figure may be analysed by dividing it into five horizontal layers :

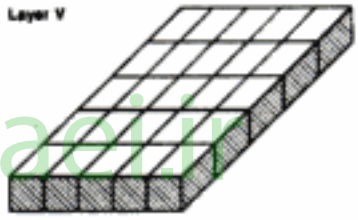
In layer I; the nine central cubes have only one face painted, four cubes at the corner have three faces painted and the remaining 12 cubes have two faces painted.



In each of the layers II, III & IV; the nine central cubes have no face painted, the four cubes at the corner have two faces painted and the remaining 12 cubes have one face painted.



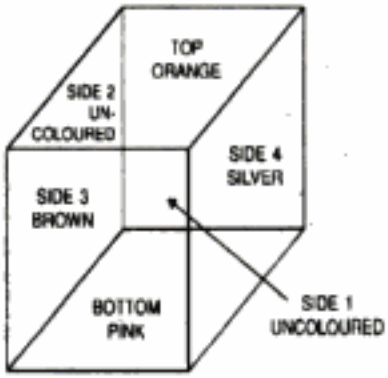
In layer V; the 9 central cubes have only one face painted, four cubes at the corner have three faces painted and the remaining 12 cubes have two faces painted.



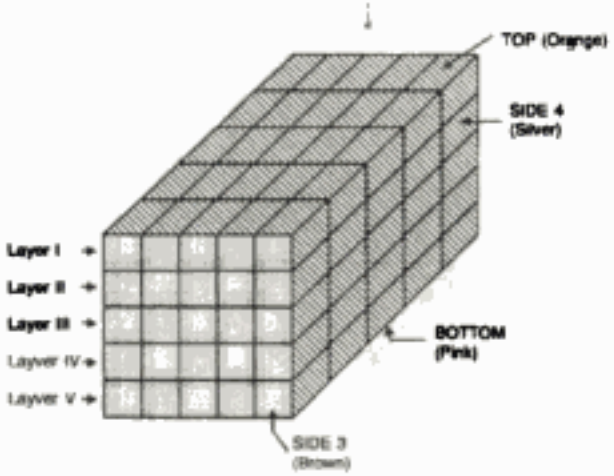
1. (*d*) : There are 9 central cubes in each of the layers II, III and IV which have no face painted. Thus, there are $9 \times 3 = 27$ such cubes.

2. (*d*) : There are 9 cubes in layer I, 12 cubes in each of the layers II, III and IV, 9 cubes in layer V which are painted on one face only. Thus, there are $9 + 12 \times 3 + 9 = 54$ such cubes.

Sol. 9 : On the basis of the given details, the cube will be coloured as indicated in the adjoining figure :



This cube is divided into 125 smaller cubes as shown in the figure below.



The figure may be analysed by assuming it to be made up of five horizontal layers :

1. (*d*) : All the 25 cubes in layer V have at least one face coloured pink.

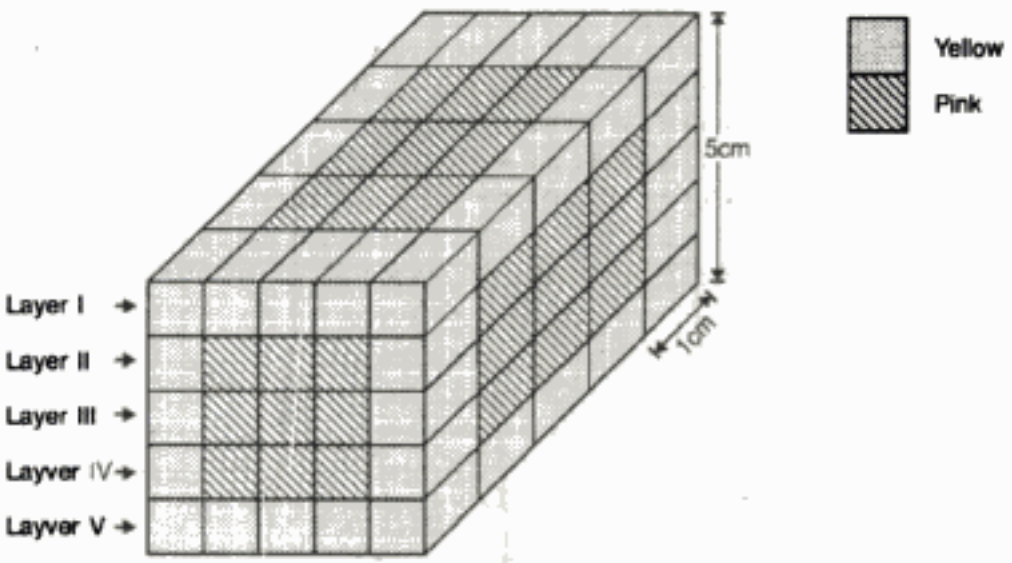
2. (*c*) : In each of the layers II, III and IV, all the cubes except those which lie along the sides 3 and 4, have all the faces uncoloured. Thus, there are 16 such cubes in each of these three layers i.e. there are $16 \times 3 = 48$ such cubes in all.

3. (*c*) : There are 8 cubes in layer I, 1 cube each in the layers II, III and IV and 8 cubes in layer V which have two faces coloured. Also, there is 1 cube in layer I, and 1 cube in layer V which have three faces coloured. Thus, there are $8 + 1 \times 3 + 8 + 1 + 1 = 21$ cubes having at least two faces coloured.

4. (*d*) : The cubes coloured orange on one face and having the remaining faces uncoloured, lie in layer I except along the sides 3 and 4. Thus, there are 16 such cubes.

5. (*a*) : There are 4 cubes in layer I along side 4 which are coloured silver on one face, orange on another face and having four uncoloured faces. Also, there, there 4 cubes in layer V along side 4 which are coloured silver on one face, pink on another face and having four uncoloured faces. Thus, there are 8 cubes of required type.

Sol. 10 : The following figure shows the cube which is painted as stated in the question, and then divided into 125 smaller cubes :



The figure may be analysed by assuming the larger cube to be made up of five horizontal layers.

1. (*d*) : 9 cubes in the centre of each of the layers II, III and IV have all the faces uncoloured. Thus, there are $9 \times 3 = 27$ such cubes.

2. (*c*) : 4 corner cubes in layer I and 4 corner cubes in layer V have three faces coloured yellow. Thus, there are 8 such cubes.

3. (*b*) : 12 cubes in layer I, 4 cubes in each of the layers II, III and IV and 12 cubes in layer V have two faces coloured yellow. 4 cubes in layer I and 4 cubes in layer V have three faces coloured yellow. Thus, there are $12 + 4 \times 3 + 12 + 4 + 4 = 44$ cubes having at least two faces coloured yellow.

4. (*a*) : There is no cube having one face pink and an adjacent face yellow.

5. (*c*) : There are 125 cubes in all and out of these 27 cubes have all faces uncoloured. Thus, there are $125 - 27 = 98$ cubes having at least one face coloured.

Sol. 11 : In the figure there are 36 cubes, 32 of which are of the same size and 4 others are of bigger size. Clearly, each side of bigger cubes is twice as large as that of smaller cubes. Also, since no face of any of the larger cubes is painted blue, so, each one of the larger cubes has one face painted red, one face painted black and all other faces unpainted.

1. (*d*) : Cubes having at least one face painted blue are those which lie along the two surfaces painted blue. Since each blue surface has 16 cubes, so, there are $16 \times 2 = 32$ such cubes.

2. (*c*) : The cubes having only one face painted are the 4 central cubes along each of the two surfaces painted blue. Thus, there are $4 \times 2 = 8$ such cubes.

3. (*b*) : Leaving the 4 central cubes on each of the blue surface and 8 cubes at the edges of the block; all the rest have two faces painted. Thus, the cubes having only two faces painted are 8 cubes on each of the blue surfaces and 4 larger cubes i.e. there are $(8 \times 2) + 4 = 20$ such cubes.

4. (*c*) : There are no cubes having more than three faces painted. 8 cubes at the edges of the block have three faces painted and as calculated above, 20 cubes have two faces painted. Thus, $8 + 20 = 28$ cubes have two or more faces painted.

5. (*a*) : The 8 cubes at the edges of the block have three faces painted.

6. (*d*) : The cubes having at least one face painted yellow are the 10 cubes along the top surface and 10 cubes along the bottom surface i.e. 20 cubes having at least one face painted yellow.

Thus, the number of cubes having none of their faces painted yellow are $36 - 20 = 16$.

7. (*d*) : The cubes having at least one of the faces painted black are the 10 cubes along each of the black surfaces. i.e. there are 20 such cubes.

8. (*a*) : The number of cubes having at least one of the faces painted yellow is 20. Also, the number of cubes having at least one of the faces painted blue is 32. (*Those lying along the two blue surfaces*). But there are 16 cubes lying along the 4 edges common to blue and yellow surfaces.

Thus, the cubes having at least one of their faces painted yellow or blue is $(20 + 32 - 16) = 36$.

9. (*d*) : The number of cubes having at least one of the faces painted are the 16 cubes, each along the surfaces painted blue and 4 larger cubes. Thus there are $(16 \times 2) + 4 = 36$ cubes having at least one of the faces painted. Since, there are 36 cubes in all, therefore, number of cubes having no face painted $= 36 - 36 = 0$.

10. (*c*) : Clearly, there are two small and one larger cubes i.e. 3 cubes along each of the edges common to yellow and black surfaces, which have one face painted yellow and one face painted black. Thus, there are $(4 \times 3) = 12$ such cubes.

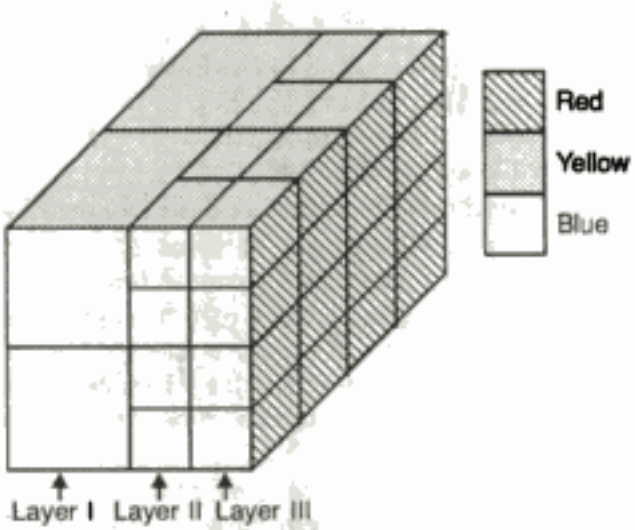
Sol. 12 : The following figure shows the cube which is coloured and cut as stated in the question :

The figure may be analysed by assuming the larger cube to be made up of three vertical layers.

1. (*c*) : Four central cubes in layer II do not have any coloured face.

2. (*b*) : The 16 cubes in layer II do not have any red face.

3. (*a*) : All the four cubes in layer I have three coloured faces, four cubes in the corner of layer II have two coloured faces and except for the four central cubes all the



remaining 12 cubes in layer III have two or three faces coloured. Thus, there are 4 + 4 + 12 = 20 cubes having at least two coloured faces.

4. (*a*) : There are four cubes each having one yellow face and all other faces blank, these cubes lie in layer II.

5. (*d*) : All the four cubes in layer I and 8 cubes in each of the layers II and III have at least one blue face. Thus, there are 4 + 8 + 8 = 20 such cubes.

Sol. 13 (*c*) : Fig. 1 shows the cube which is painted as stated in the question.
When this cube is divided into 64 smaller cubes, we get the figure as shown in Fig. 2.

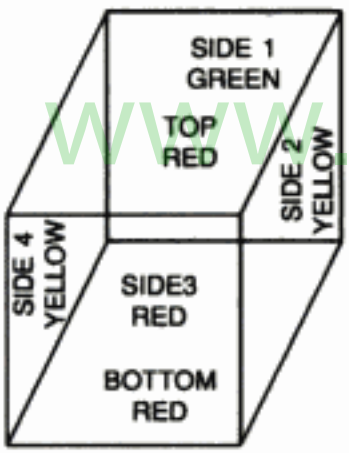


Fig 1

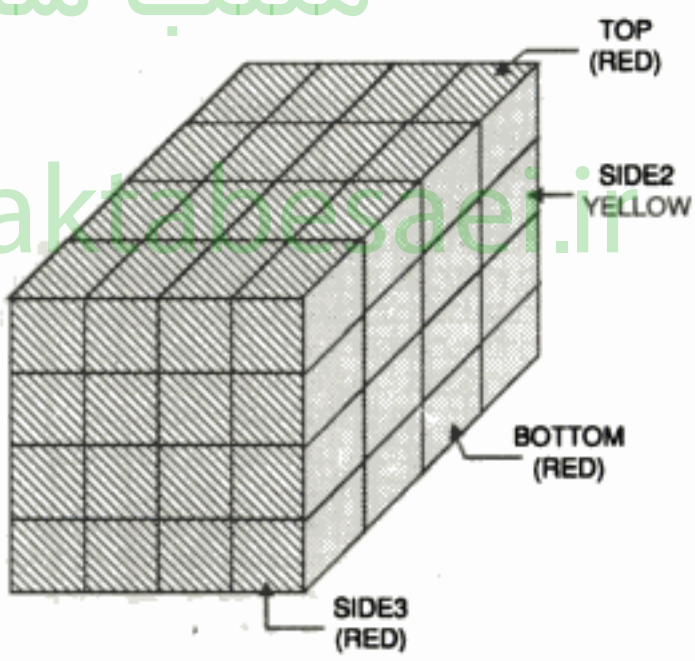


Fig 2

Clearly the cubes which have only one face red coloured and all other faces uncoloured are the four central cubes at each of the three faces of the larger cube the top, side 3 and the bottom. Thus, there are 4 × 3 = 12 such cubes.

Sol. 14 : In the figure there are 16 columns of 5 cubes each and 9 coloumns of 4 cubes each i.e. a total to 116 cubes.

1. (*a*) : The cubes having at least one of their faces painted are the 16 columns of 5 cubes each placed along the periphery and 9 cubes of the top.
Thus, number of cubes having at least one face painted = (16 × 5) + 9 = 89.
Hence, the number of cubes having no face painted = 116 – 89 = 27.

2. (*c*) : The cubes having only one face painted are the 12 central cubes on each side of the block and 9 cubes of the top.
(*Note here that the bottom surface of the block is not painted*)
Thus, $(4 \times 12) + 9 = 57$ cubes have only one face painted.

3. (*b*) : The cubes having only two faces painted are four cubes along each of the vertical edges leaving the top one in each of these edges. Thus, there are $(4 \times 4) = 16$ such cubes.

4. (*c*) : The cubes placed on the top of all the 16 coloumns forming the boundary of the block are the onces which have exactly three faces painted. Thus, there are 16 cubes having three faces painted.

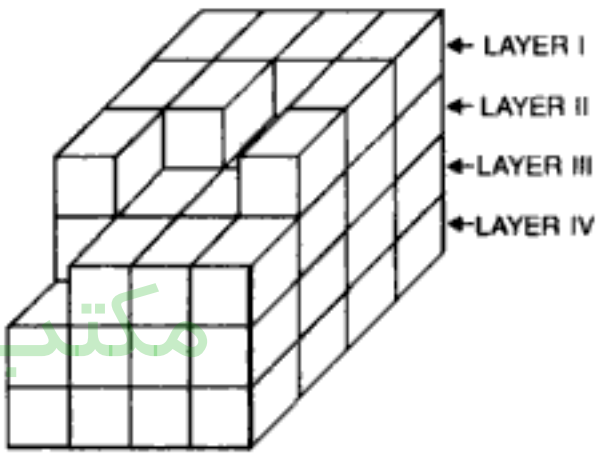
Sol. 15. : The given figure may be analysed by assuming the block to be made up of four horizontal layers, as shown in the adjoining figure :

In layer I; there are 2 cubes having four faces coloured, 5 cubes having three faces coloured, 2 cubes having two faces coloured.

In layer II; there are 2 cubes having three faces coloured, 4 cubes having two faces coloured, 8 cubes having one face coloured and 1 cube having no face coloured.

In layer III; there is 1 cube having three faces coloured, 3 cubes having two faces coloured 8 cubes having one face coloured and 4 cubes having no face coloured.

In layer IV; there are 4 cubes having two faces coloured, 8 cubes having one face coloured and 4 cubes having no face coloured.



1. (*c*) . There are 2 cubes (in layer I) having four faces coloured.

2. (*c*) : There are 5 cubes in layer I, 2 cubes in layer II & 1 cube in layer III, having three faces coloured. Thus, there are $5 + 2 + 1 = 8$ such cubes.

3. (*c*) : There are 2 cubes in layer I, 2 cubes in layer II, 3 cubes in layer III and 4 cubes in layer IV having two faces coloured Thus, there are $2 + 4 + 3 + 4 = 13$.

4. (*b*) : There are 8 cubes in layer II, 8 cubes in layer III and 8 cubes in layer IV having only one face coloured. Thus, there are $8 + 8 + 8 = 24$ such cubes.

5. (*c*) : There is 1 cube in layer II, 4 cubes in layer III and 4 cubes in layer IV having no face coloured. Thus, there are $1 + 4 + 4 = 9$ such cubes.

Sol. 16 (*c*) : Opposite faces can have the same colour and there are six faces in a cube.

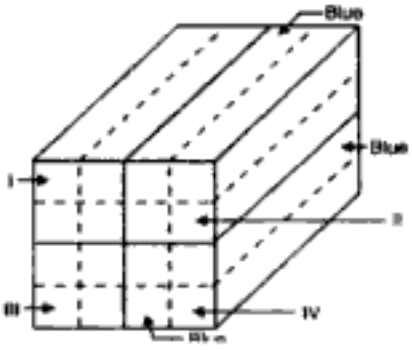
Sol. 17. : The adjoining figure shows the cube coloured and cut into four cuboids as stated in the question :

These four cuboids are separated and coloured pink on all uncoloured faces. Each of these four cuboids is then cut into four other cuboids as shown by the dotted lines in the figure. Thus, we get 4 sets of 4 cuboids each.

In set I & IV : 2 cuboids have 2 faces blue, 2 faces pink and 2 faces uncoloured each.

2 cuboids have 1 face blue, 3 faces pink and 2 faces uncoloured each.

In set II : 2 cuboids have 2 faces blue, 2 faces pink and 2 faces uncoloured each.



1 cuboid has 3 faces blue, 1 face pink and 2 faces uncoloured each.

1 cuboid has 1 face blue, 3 faces pink and 2 faces uncoloured each.

In set III : All the four cuboids have 1 face blue, 3 faces pink and 2 faces uncoloured each.

1. (*d*) : There are 2 cuboids in set I, 2 cuboids in set II and 2 cuboids in set III having 2 faces pink in each. Thus, there are 2 + 2 + 2 = 6 such cubes.

2. (*a*) : There are 2 cuboids in set I, 1 cuboid in set II, 4 cuboids in set III and 2 cuboids in set IV having 3 faces pink each. Thus, there are 9 such cuboids.

3. (*c*) : There is only one cuboid having three faces blue. This cuboid lies in set II.

Sol. 18. : The number of each of the cubes is given along with the number of its faces touching other cubes :—

1. → 2 ; **2.** → 2 ; **3.** → 4 ; **4.** →4 ; **5.** →4 ; **6.** →4 ; **7.** →4 ; **8.** →4 ; **9.** →2 ; **10.** →2 ; **11.** →4 ; **12.** →4 ; **13.** →5 ; **14.** →5 ; **15.** →4 ; **16.** →4 ; **17.** →3 ; **18.** →4 ; **19.** →4 ; **20.** →5 ; **21.** →3 ; **22.** →4 ; **23.** →1 ; **24.** →3 ; **25.** →3 ; **26.** →3 ; **27.** →1.

1. (*a*) : The cubes having the maximum number of faces touching other cubes are those touching **5** other cubes. These are **13., 14,** and **20**. i.e. there are **3** such cubes.

2. (*b*) : The cubes having the minimum number of faces touching other cubes are those touching **1** cube only. These are **23** and **27**. i.e. there are **2** such cubes.

3. (*c*) : Only the cube **20** touches **5** other cubes i.e. maximum number of cubes.

4. (*b*) : Only the cube **13** touches **5** other cubes i.e. maximum number of cubes.

5. (*d*) : Only the cube **23** touches **1** other cube i.e. minimum number of cubes.

6. (*b*) : The number of the cube below any cube is one greater than that of the upper cube. ∴ Cube **20** lies below cube **19**.

7. (*b*) : The cube hidden below cube **13.** is cube **14.**

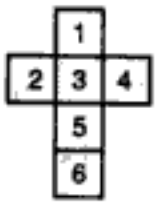
8. (*a*) : The cubes hidden are **2, 4, 6, 8, 12, 14, 18** and **20** which cannot be numbered since none of their faces is visible.

9. (*d*) : The cubes having their faces touching four other cubes are **3, 4, 5, 6, 7, 8, 11, 12, 5, 16, 18, 19** and **22** Thus, there are **13** such cubes.

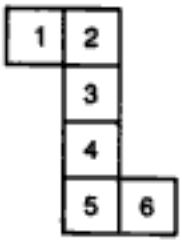
10. (*b*) : Cubes **13, 14** and **20** have their faces touching five other cubes.

CONSTRUCTION OF BOXES

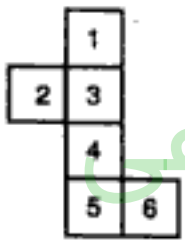
When a cube or a cuboid is unfolded, it may appear in any of the following forms :

Form 1 : 

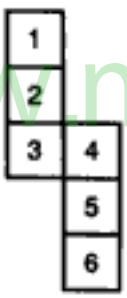
In this case : 1 lies opposite 5;
2 lies opposite 4;
3 lies opposite 6.

Form 2 : 

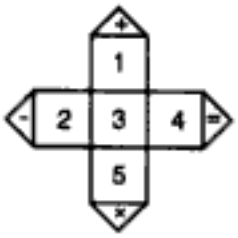
In this case : 1 lies opposite 6;
2 lies opposite 4;
3 lies opposite 5.

Form 3 : 

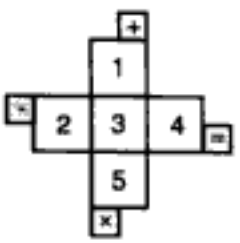
In this case : 1 lies opposite 4;
2 lies opposite 6;
3 lies opposite 5.

Form 4 : 

In this case : 1 lies opposite 3;
2 lies opposite 5;
4 lies opposite 6.

Form 5 : 

In this case :  will be one of the faces of the cube, which lies opposite 3;
2 lies opposite 4;
1 lies opposite 5.

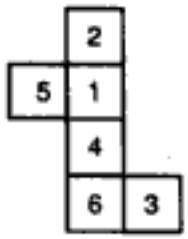
Form 5 : 

In this case :  will be one of the faces of the cube, which lies opposite 3;
2 lies opposite 4;
1 lies opposite 5.

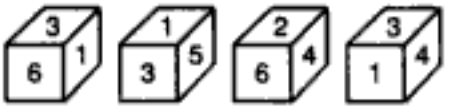
EXERCISE 14C

Directions : ***The figure (X) given on the left hand side, in each problem, is folded to form a box. Choose from amongst the alternatives (a), (b), (c) and (d), the boxes that are similar to the box formed.***

1.



(X)



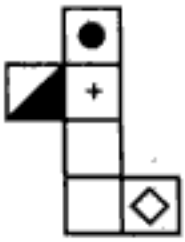
(a) (b) (c) (d)

2.

(X)

(a) (b) (c) (d)

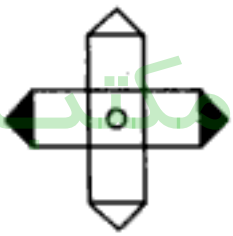
3.



(X)

(a) (b) (c) (d)

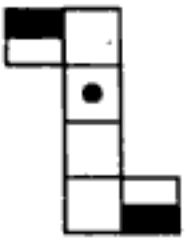
4.



(X)

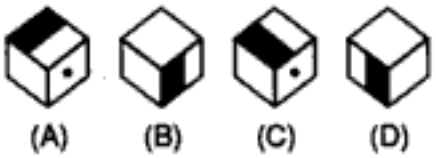
(a) (b) (c) (d)

5.



(X)

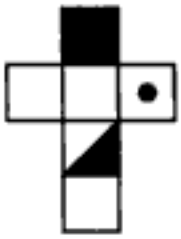
(Asstt. Grade, 1992)



(A) (B) (C) (D)

(a) A and B only (b) B and C only
(c) B and D only (d) A, B, C and D

6.

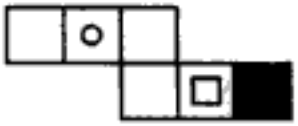


(X)

(A) (B) (C) (D)

(a) A and C only (b) B, C and D only
(c) B and D only (d) C and D only

7.

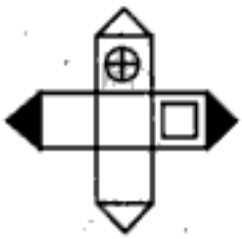


(X)

(A) (B) (C) (D)

(a) A and B only (b) B, C and D only
(c) D only (d) C and D only

8.

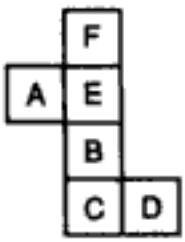


(X)

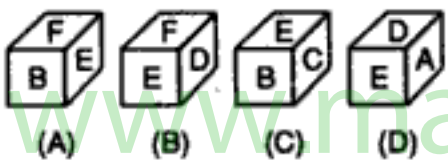
(a) (b) (c) (d)

(a) A and B only (b) B and C only
(c) A and D only (d) A, B, C and D.

9.



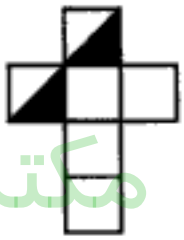
(X)



(A) (B) (C) (D)

(a) A only (b) B only
(c) A and C only (d) A, B, C and D

10.



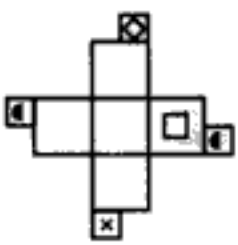
(X)

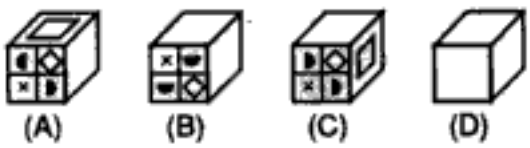
(Asstt. Grade, 1992)

(A) (B) (C) (D)

(a) A and D only (b) C and D only
(c) A and B only (d) B and C only

11.

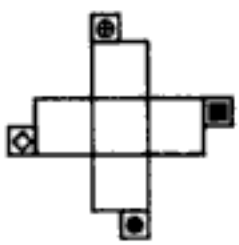


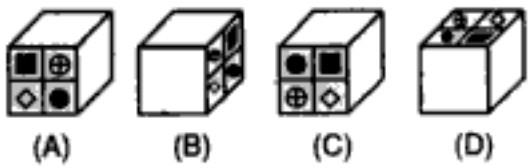


(A) (B) (C) (D)

(a) A, B and C only (b) B and C only
(c) A, C and D only (d) B, C and D only

12.





(A) (B) (C) (D)

(a) A and B only (c) B and C only
(b) B only (d) A, B and D only

ANSWERS

1. (*d*) : Fig (X) is the same as form **3.** so, when cube is formed, 2 lies opposite 4; 1 lies opposite 6 and 5 lies opposite 3. Hence, the pairs 2 & 4, 1 & 6 5 & 3 cannot occur at adjacent faces. So, only cube (*d*) can be formed.

2. (*a*) : When fig. (X) is folded to form a cube, the two rectangular portions combine to form the top of the cube. So, cube (*a*) will be formed.

3. (*b*) Fig (X) is the same as form **3.** So, when it is folded to form a cube, the half shaded face will lie opposite the face bearing the rhombus. So, the possibility of cubes (*a*) and (*d*) is ruled out. Out of the cubes (*b*) and (*c*), the pattern in figure (x) shows that cube (*b*) will be formed.

4. (*d*) : Fig. (x) is the same as form **5.** The four triangular portions will combine to form a face of the type  which lies opposite to the face bearing the circle. So, none of the cubes (*a*), (*b*) or (*c*) can be formed.

5. (*d*) : Fig. (x) is the same as form **2.** So, the half shaded faces lie opposite to each other. The pattern in fig. (x) shows that on folding, each of the cubes A, B, C and D are possible.

6. (*b*) : Fig. (x) is the same as form **1.** So, the half shaded face and the completely shaded faces lie opposite to each other. Therefore, the cube (A) cannot be formed. Moreover, the pattern in fig (x) shows that out of the cubes B, C and D, only the cubes B and D can be formed by folding fig. (x).

7. (*d*) : Fig (x) is the same as form **4.** So, the faces bearing the circle and the square lie opposite to, each other. Therefore, the cubes (A) and (B) cannot be formed. The pattern in fig. (x) Shows that both the cubes (*C*) and (D) can be formed by folding fig. (x).

8. (*d*) : Fig. (x) is the same as form **5.** The pattern on fig. (x) shows that all the cubes (A), (B), (C) and (D) can be formed by folding fig. (x).

9. (*b*) : Fig. (x) is the same as form **3.** So, when the cube is formed, F lies opposite B; E lies opposite C; D lies opposite A. Hence, the pairs F & B, E & C and D & A cannot occur at adjacent faces. So, only cube (B) can be formed.

10. (*a*) : The pattern on fig. (x) shows that the cubes (A) and (D) can be formed by folding fig. (x).

11. (*d*) : The pattern on fig. (x) shows that the cubes (B), (C) and (D) can be formed by folding fig. (x).

12. (*b*) : When fig. (x) is folded to form a cube with one of the faces as  Therefore, cube (B) can be formed by folding fig. (x) None of the cubes A, C or D can be formed by folding fig. (x).

13. (*a*) : Fig. (x) is similar to form **1.** So, the two rectangular shaded portions form two faces of the cuboid. Therefore, the cuboids (B) and (D) cannot be obtained by folding fig. (x). Both the cuboids (A) and (C) can be obtained by folding fig. (x)

14. (*d*) : The pattern in fig. (x) shows that each one of the cubes (A), (B), (C) and (D) can be formed by folding fig. (x).

15. (*c*) : The shaded face and the face bearing the square will lie opposite to each other. So, the cubes (B) and (D) cannot be formed by folding fig. (x). The pattern shows that both the cubes (A) and (C) can be formed by folding fig. (x).

16. (*b*) : One of the black faces lies opposite the face bearing the dot. So both the black faces cannot lie adjacent to the face bearing the dot. So, cube (B) cannot be formed by folding fig. (x). The pattern in fig. (x) shows that each of the cubes (A), (C) and (D) can be formed by folding fig. (x).

17. (*a*) : The faces bearing the dot and the shading lie opposite to each other. So, the cubes (B) and (D) cannot be formed by folding fig. (x). Two of the blank faces lie opposite to each other. So, the three blank faces cannot lie adjacent to each other. Therefore, the cube (C) also cannot be formed. The pattern shows that cube (A) can be formed by folding fig. (x).

18. (*b*) : The pattern in fig. (x) shows that when fig. (x) is folded, only the cubes (A) and (C) can be formed.

19. (*b*) : The pattern in fig. (x) shows that except cube (C) each other cube can be formed by folding fig. (x).

20. (*c*) : When fig. (x) is folded to form a cube, the two rectangular portions combine to form a face  . This face lies opposite the face bearing the square. Also, two of the blank faces lie opposite to each other. So the three blank faces cannot lie adjacent to each other. Hence, cube (B) cannot be formed. The pattern in fig. (x) shows that all other cubes can be formed by folding fig. (x).

21. (*d*) : The pattern on fig. (x) shows that only cube (*d*) can be formed by folding fig. (x).

22. (*a*) : The fig. (x) is similar to form **2.** So, the two half shaded portions lie opposite to each other. Therefore, the cubes (*b*) and (*c*) cannot be formed by folding fig. (x). The pattern in fig. (x) shows that cube (*d*) cannot be formed and only cube (*a*) can be formed by folding fig. (x).

23. (*d*) : The two half shaded faces lie opposite to each other when fig. (x) is folded. So, the cube (B) cannot be formed. The pattern in fig. (x) shows that, out of the remaining three cubes, only the cubes (A) and (C) can be formed by folding fig. (x).

24. (*a*) : When fig. (x) is folded to form a cube, the two half shaded faces lie opposite to each other. So, the cube (D) cannot be formed. The pattern in fig. (x) shows that out of the remaining three cubes, only the cubes (A) and (C) can be formed by folding fig. (x).

25. (*c*) : Fig. (x) is similar to form **5.** So, the four triangular portions combine to form a single face of the cube when fig. (x) is folded. Therefore, the cubes (A) and (D) will not be formed. The pattern on fig. (x) shows that both the cubes (B) and (C) can be formed by folding fig. (x).

26. (*a*) : The pattern on fig. (x) and also the fact that the faces are rectangle, indicate that only fig. (A) can be obtained by folding fig. (x).

27. (*d*) : The pattern in cube (x) shows that only fig. (*d*) can be formed by unfolding the cube (x).

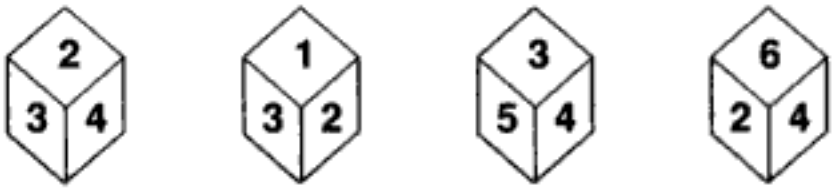
28. (*c*) : The given figure is similar to form **3.** So, three dots would lie opposite the face bearing five dots.

29. (*d*) : The given figure is similar to form **4.** So, six dots would lie opposite the face having three dots.

PROBLEMS ON DICE

Sometimes we are given figures showing the same die in various positions. After observing these figures, we have to find the number opposite a given number on the die. The procedure to be adopted for solving such problems, will be clear from the following examples :

Example 1 : ***A die is thrown four times and its four different positions are given below. Find the number on the face opposite the face showing 2.***

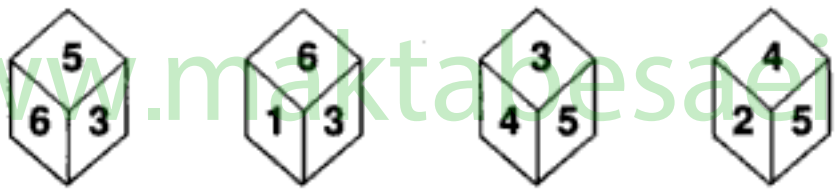


(*i*) (*ii*) (*iii*) (*iv*)

(*a*) 3 (*b*) 4 (*c*) 5 (*d*) 6

Solution : Here, the number 2 appears in three dice, namely (*i*), (*ii*) and (*iv*). In these dice, we observe that the numbers 2, 4, 1 and 6 appear adjacent to 3. So, none of these numbers can be present opposite 2. The only number left is 5.
Hence, 5 is present on the face opposite 2.
∴ The answer is (c)

Example 2 : ***Shown below are, four different positions of the same dice. Find the number on the face opposite the face showing 6.***



(*i*) (*ii*) (*iii*) (*iv*)

(*a*) 1 (*b*) 2 (*c*) 4 (*d*) 5

Solution : In this case, the number 6 appears in only two dice from which we observe that the numbers 1, 3 and 5 appear adjacent to 6, so that 2 or 4 can appear opposite 6.
So, we begin finding a number which appears at least in three of the given dice. 3 is such a number, which appears in (i), (ii) and (iii). We observe in these dice that, the numbers 1, 4, 5 and 6 appear adjacent to 3. So, they cannot appear opposite 3. The only number that can appear opposite 3 is 2.
So, 2 cannot appear opposite 6.
Hence, 4 appears opposite 6, so that (c) is the answer.

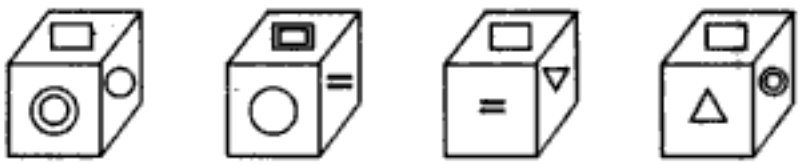
We are now in a position to solve the following exercise.

Hidden page

6. If the total number of dots on opposite faces of a cubical block is always 7, find the figure which is correct. **(Clerk's Grade, 1995)**

(a) (b) (c) (d)

Directions : ***Questions 7 to 9 are based on the following illustrations, which are four views of a cube.*** **(Railways, 1993)**



(i) (ii) (iii) (iv)

Study these illustrations carefully and attempt questions 7 to 9.

7. The symbol at the bottom of (iv) is

(a) ○ (b) ◎ (c) △ (d) ▭

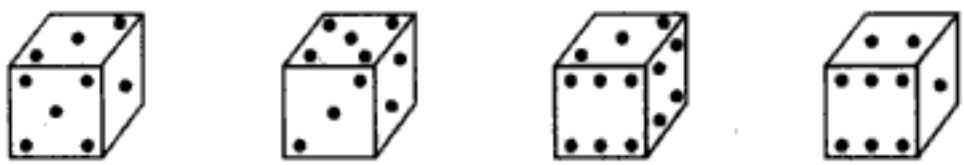
8. The symbol opposite the face having the symbol = is

(a) ○ (b) △ (c) ◎ (d) ▭

9. The symbol opposite the face having triangle is

(a) ○ (b) ◎ (c) = (d) ▭

10. If the total number of dots on opposite faces of a cubical block is always 7, find the figure which is correct. **(S.S.C. 1995)**



(a) (b) (c) (d)

11.

(i) (ii) (iii)

(I.A.S. 1982)

What should be the number opposite 3 ?

(a) 1 (b) 6 (c) 5 (d) 4

12. 

(i) (ii) (iii)

How many dots lie opposite 2 dots ?

(a) 1 (b) 3 (c) 5 (d) 6

13. 

(i) (ii) (iii)

Find the number of dots on the face opposite the face bearing 3 dots.

(a) 5 (b) 6 (c) 4 (d) Cannot be determined

14. 

(i) (ii) (iii)

What numbers occur at the bottom face in the three positions of the same die ?

(a) 6, 6, 2 (b) 5, 6, 1 (c) 5, 5, 5 (d) 6, 5, 2

15. *The six faces of a die have been marked with alphabets A, B, C, D, E and F respectively. This die is rolled down three times. The three positions are shown as :*

(i) (ii) (iii)

Find the alphabet opposite A.

(a) B (b) C (c) D (d) E

16. 

(i) (ii) (iii)

A cube has six different symbols drawn over its six faces. The symbols are dot, circle, triangle, square, cross and arrow. Three different positions of the cube are shown in figures (i), (ii) & (iii).

(i) Which symbol is opposite the dot ?

(a) Circle (b) Triangle (c) Arrow (d) Cross

(ii) Which symbol is opposite the Arrow?

(a) Circle (b) Triangle (c) Dot (d) Cross

(iii) Which symbol occurs at the bottom of fig. (ii).

(a) Arrow (b) Triangle (c) Circle (d) Dot

17.

(X)

(Y)

(Z)

(i) Which number lies at the bottom face of the die X ?

(a) 1 (b) 2 (c) 3 (d) 4

(ii) Which number lies at the bottom face of the die Y ?

(a) 6 (b) 5 (c) 2 (d) 1

(iii) Which number lies opposite 6?

(a) 1 (b) 2 (c) 4 (d) 5

(iv) Which numbers are hidden behind the numbers 6 and 5 in the die Z?

(a) 1 & 4 (b) 1 & 3 (c) 4 & 3 (d) 1 & 2

(v) Which of the hidden numbers adjacent to 5 in die X are common to the hidden numbers adjacent to 5 in die Z?

(a) 1 & 4 (b) 2 (c) 6 (d) None

18. Two positions of a dice are shown below. If 1 is at the bottom, which number will be on the top ? **(Asstt. Grade, 1994)**


(i)


(ii)

(a) 2 (b) 3 (c) 4 (d) 5

19.


(i)

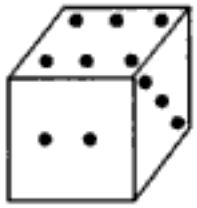

(ii)

What is the number of dots at the bottom face of the left hand side dice ?

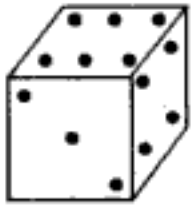
(a) 3 (b) 4 (c) 5 (d) 6

20. Two positions of a dice with 1 to 6 dots on its sides are shown below. If the dice is resting on the side with three dots, what will be the number of dots on the side at the top?

(Section Officers, 1993)



(*i*)



(*ii*)

(*a*) 1 or 5 (*b*) 2 (*c*) 3 (*d*) 5

21. *What will be the number at the bottom if 5 is at the top; the two positions of the dice being as given below :*

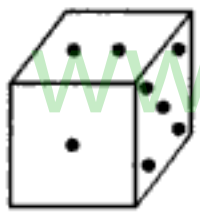
(*i*)

(*ii*)

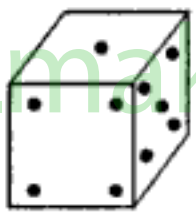
(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 6

22. *Observe the dots on a dice (one to six dots) in the following figures. How many dots are contained on the face opposite to that containing four dots?*

(I. Tax & Central Excise, 1996)



(*i*)



(*ii*)

(*a*) 2 (*b*) 3 (*c*) 5 (*d*) 6

23.

(*i*)

(*ii*)

What is the number of dots on the face opposite 2 dots ?

(*a*) 1 (*b*) 3 (*c*) 4 (*d*) 6

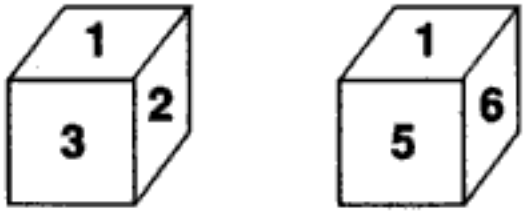
24. *Two positions of a block are shown below. When 2 is at the bottom, which number will be at the top?*

(U.D.C. 1995)

When Blue is on the top, which colour will be at the bottom ?

(a) Orange (b) Red (c) White (d) Yellow

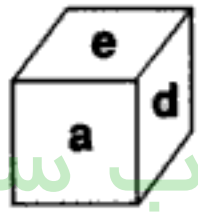
29. Two positions of a dice are shown. When 4 is at the bottom, what number will be on the top ? **(Asstt. Grade, 1995)**



(i) (ii)

(a) 1 (b) 2 (c) 5 (d) 6

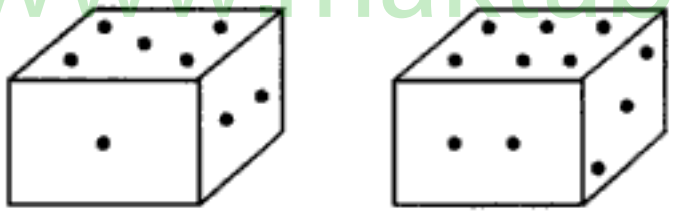
30. In a dice a, b, c and d are written on the adjacent faces, in a clockwise order and e and f at the top and bottom. When c is at the top, what will be at the bottom? **(Asstt. Grade, 1995)**



(i)

(a) a (b) b (c) c (d) e

31. Two positions of a parallelopiped are shown below. When the number 3 will be on the top side, then which number will be at the bottom ? **(I. Tax & Central Excise, 1994)**



(i) (ii)

(a) 1 (b) 4 (c) 5 (d) 6

32. Two positions of a dice are shown below. When there are two dots at the bottom, the number of dots at the top will be **(Asstt. Grade, 1995)**

(i) (ii)

(a) 2 (b) 3 (c) 5 (d) 6

33. *Two positions of a block are shown below :* **(U.D.C. 1995)**

(*i*) (*ii*)

When six is at the bottom, what number will be at the top ?

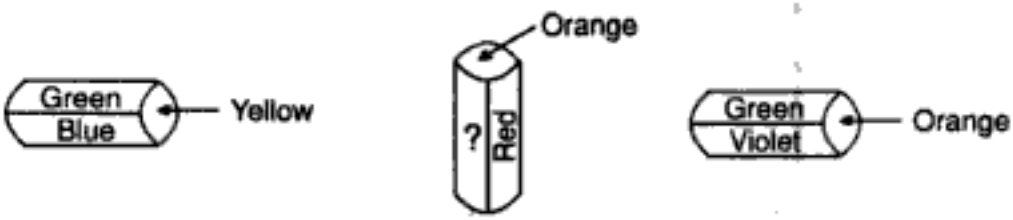
(*a*) 1 (*b*) 2 (*c*) 4 (*d*) 5

34. *The lateral sides of a block in the shape of a six-sided prism is painted in Violet, Blue, Green, Yellow, Orange and Red. Two of its positions are shown below :*

When the block is laid as in the figure what are the colours adjacent to the Red side ? **(Asstt. Grade, 1994)**

(*a*) Yellow and Orange (*b*) Yellow and Blue
(*c*) Violet and Yellow (*d*) Violet and Orange

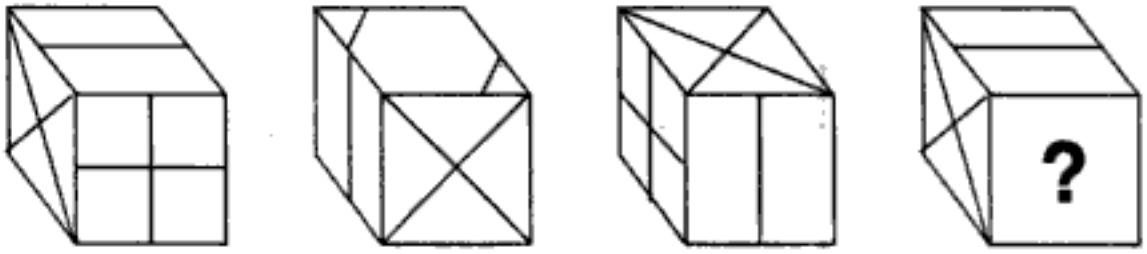
35. *A cylinder is painted in 6 colours-- Green, Blue, Yellow, Violet, Red and Orange. Two positions are shown below :* **(Asstt. Grade, 1994)**



What is the colour in the empty space ?

(*a*) Blue (*b*) Green (d) Violet (d) Yellow

36. *A cubical block with designs in the faces is presented as viewed from different directions. Find the design on the blank face?* **(Asstt. Grade, 1993)**



(*i*) (*ii*) (*iii*) (*iv*)

ANSWERS

1. (*a*) : From fig. (*i*), (*ii*) and (*iii*), it is clear that the numbers 3, 2, 4 and 5 lie adjacent to the number 6. So, 1 lies opposite 6.

2. (*a*) : From fig. (*i*), (*ii*) and (*iii*), it is clear that the numbers 1, 5, 4 and 2 lie adjacent to the number 3. So, 6 lies opposite 3. From fig. (*ii*) and (*iii*), it follows that 3, 5 and 2 lie adjacent to 4. So, 1 and 6 can lie opposite 4. But 6 lies opposite 3. Therefore, 1 lies opposite 4.

3. (*c*) : From fig. (*i*), (*iii*) and (*iv*), it is clear that the numbers 6, 1, 5 and 2 lie adjacent to 3. So, 4 lies opposite 3.

4. (*a*) : From fig. (*iii*) and (*iv*), it is clear that the numbers 5, 6 2, and 3 lie adjacent to 4. So, 1 lies opposite 4.

5. (*c*) : From fig. (*i*), (*iii*) and (*iv*), we find that the numbers adjacent to 4 are 5, 6, 1 and 2. So, 3 lies opposite 4 i.e. 4 lies opposite 3.

6. (*c*) : Since the sum of the number of dots on opposite faces of the block is always 7, we cannot get 1 dot adjacent 6 dots, 2 dots adjacent 5 dots or 3 dots adjacent 4 dots. So, the figures (*a*), (*b*) and (*d*) cannot be correct.

7. (*d*) : From fig. (*i*), (*iii*) and (*iv*), we observe that the symbols 'O' 'O', '=' & 'Δ' lie adjacent to '□'. So, '□' lies opposite '□'.

8. (*c*) : From fig. (*ii*) and (*iii*), it is clear that the symbols '□', 'O' '□' and 'Δ' lie adjacent to '=' sign. So, ○ lies opposite '='

9. (*a*) : From fig. (*iii*) and (*iv*), it follows that the symbols '□', '=' & 'O' lie adjacent to 'Δ'. So one of the symbols 'O' or '□' can lie opposite 'Δ'. But '□' lies opposite '□'. So 'O' lies opposite 'Δ'.

10. (*a*) : Since the sum of the number of dots on opposite faces of the block is always 7, we cannot get 1 dot adjacent 6 dots, 2 dots adjacent 5 dots or 3 dots adjacent 4 dots. So, the figures (*b*), (*c*) and (*d*) cannot be correct.

11. (*b*) : From the three given figures, it is clear that the numbers 1, 2, 5 and 4 appear adjacent to 3, so none of these can appear opposite 3. Therefore, 6 appears opposite 3.

12. (*c*) : From figures (*ii*) and (*iii*), it is clear that one, three, four and six dots cannot appear opposite five dots. Therefore, two dots appear opposite five dots.

13. (*b*) : From fig. (*ii*) and (*iii*) it is clear that six, four, one and three dots cannot appear opposite two dots. So, five dots appear opposite two dots. From fig. (*i*) and (*iii*) it is clear that four, two and one dots cannot appear opposite three dots. Also, since five dots appear opposite two dots so they cannot appear opposite three dots. Therefore, six dots appear opposite three dots.

14. (*c*) : From three figures it is clear that the numbers 2, 3, 1 and 6 cannot appear opposite 4. So, 5 appears opposite 4. Since in each one of the three dice, 4 appears on the top. So, 5 appears at the bottom face of each dice.

15. (*d*) : From fig. (*ii*) and (*iii*) it is clear that C, D, B and F cannot appear opposite E. So, A appears opposite E. i.e. E is the alphabet opposite A.

16. From fig. (*i*) and (*iii*), it is clear that dot, triangle, cross and arrow cannot appear opposite the circle. So, the *square lies opposite the circle.*
From fig. (*ii*) and (*iii*), it is clear that triangle, square, arrow and circle cannot appear opposite the cross. So, *the dot lies opposite the cross.* Obviously, the triangle lies opposite the arrow.

(*i*) (*d*) : As discussed earlier, the cross lies opposite the dot.

(*ii*) (*b*) : As discussed earlier, the triangle lies opposite the arrow.

(*iii*) (*c*) : Since the square lies at the top of fig. (*ii*) and the circle lies opposite the square; so, the circle lies at the bottom of fig. (*ii*).

15. DOT SITUATION

The problems on dot situation involve the search of similar conditions in the alternative figures as indicated in the problem figure. The problem figure contains dots placed in the spaces enclosed between the combinations of square, triangle, rectangle and circle. Selecting one of these dots we observe the region in which this dot in enclosed i.e. to which of the four figures (circle, square, rectangle and triangle) is this region common. Then we look for such a region in the four alternatives. Once we have found it, we repeat the procedure for other dots, if any. The alternative figure which contains all such regions is the answer.

Example : ***From amongst the figures marked (1), (2), (3) and (4), select the figure which satisfies the same conditions of placement of dots as in fig. (x).***

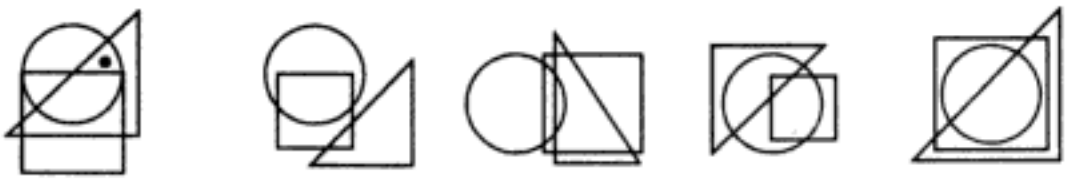
(x) (1) (2) (3) (4)

Solution. In fig. (x), one of the dots is placed in the region common to the circle and the triangle and the other dot is placed in the region common to the triangle and the square. From amongst the figures (1), (2), (3) and (4), only fig. (1) has both the regions, one common to circle and triangle and the other common to triangle and square.
Hence, fig. (1) is the answer.

EXERCISE 15

Directions : ***In each of the following questions, there is a diagram marked (x), with one or more dots placed in it. This diagram is followed by four other figures, marked (1), (2), (3) and (4) only one of which is such as to make possible the placement of the dot(s) satisfying the same conditions as in the original diagram. Find the correct alternative in each case.***

1.



(x) (1) (2) (3) (4)

2.

(x) (1) (2) (3) (4)

(Hotel Management, 1993)

region common to the circle and the rectangle. Fig. (*1*) contains no region common to square and circle only; fig. (*2*) and (*3*) contain no region common to triangle and rectangle only. Only fig. (*4*) contains all the three types of regions.

26. (*4*) : Fig. (x) contains three dots one in the region common to square and circle, second in the region common to all the figures and third in the region common to circle and triangle. In figures (*1*) and (*3*) there is no region common to the circle and square only and in fig. (*2*) there is no region common to circle and triangle only. Only fig. (*4*) contains all the three types of regions.

27. (*1*) : Fig.(x) contains three dots-one in the region common to circle and triangle, second in the region common to triangle and square and third in the region common to triangle and rectangle. Figures (*2*) and (*4*) do not contain any region common to square and triangle and fig. (*3*) does not contain any region common to the circle and triangle. Only fig.(*1*) contains all the three types of regions.

28. (*1*) : There are three dots in fig. (x) -one in the circle alone, second in the region common to all the three figures and third in the region common to square and circle only. Fig. (*2*) does not contain a region common to square and circle only and figures (*3*) and (*4*) contain no region which lies only in the circle. Only fig. (*1*) contains all the three types of regions.

29. (*1*) : Fig.(x) contains three dots-one in the region common to square and rectangle , second in the region common to all the four figures and third in the region common to rectangle and triangle. Fig. (*2*) contains no region common to rectangle and triangle only; fig. (*3*) contains no region common to rectangle and square only and fig. (*4*) contains no region common to all the four figures. Only fig. (*1*) contains all the three types of regions.

30. (*4*) : Fig.(x) contains three dots-one in the region common to circle and square only, second in the region common to square, rectangle and triangle only and third in the region common to rectangle and triangle only. Figures (*1*), (*2*) and (*3*) contain no region common to triangle, square and rectangle only. Only fig. (*4*) contains all the three type of regions.

31. (*3*) : In fig. (x), one dot lies in the region common to the circle, rectangle and triangle; the second dot lies in the region common to the triangle and circle and the third dot lies in the region common to circle, triangle and square. In figures (*1*), (*2*) and (*3*), there is no region common to circle, triangle and rectangle only. Only fig. (*3*) contains all the three types of regions.

32. (*4*) : In fig. (x), one dot appears in the region common to the circle and rectangle only, second dot appears in the region common to the circle, rectangle and square only and the third dot appears in the region common to triangle, square and circle only. Figures (*1*) and (*3*) do not contain any region common to the circle, square and rectangle, fig. (*2*) contains no region common to the circle and triangle. Only fig. (*4*) contains all the three types of regions.

16. CONSTRUCTION OF SQUARES AND TRIANGLES

This chapter deals with the brainteasing problems of construction of squares by combination of three parts after selecting them from the list of five different alternatives numbered from A to E. The following discussion would assist us in solving such problems :--

Select a piece which contains a right angle between two adjacent outer edges. Try to fit another piece in its hollow spaces. If you can't, select another piece. Repeat the procedure with different sets of such pieces. Finally with the two pieces fitting into each other, find the third piece which fits into the other two selected ones, to get a completed square finally.

We now discuss a couple of solved examples.

Example 1 :

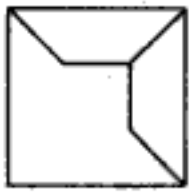
Select three out of the following five alternative figures which together form one of the four alternatives (a), (b), (c) or (d) and when fitted together will form a complete square.

A B C D E

(*a*) ACD (*b*) CDE (*c*) BCD (*d*) ACE

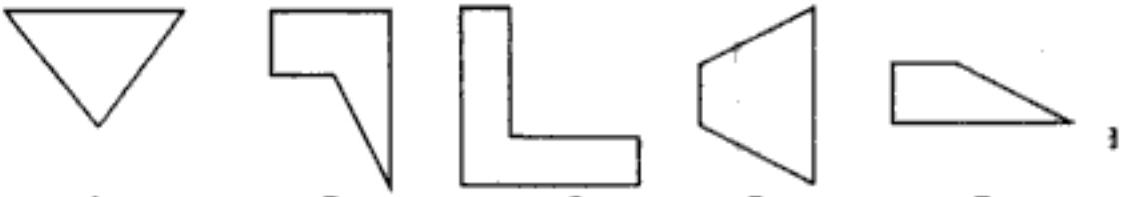
Solution : The only figure with a right angle is fig. (C). Fig. (B) fits into it as shown :--

Finally, fig. (D) completes the square by fitting into the above combination. The completed square appears, as shown :--



∴ Figures (B), (C) & (D) will together form a square.
Hence, alternative (C) is the answer.

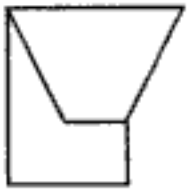
Example 2 : ***Select three out of the following five alternative figures which together form one of the four alternatives (a), (b), (c) or (d) and when fitted together will form a complete square.***



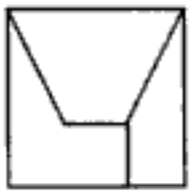
A B C D E

(*a*) ACD (*b*) BDE (*c*) ABD (*d*) ADE

Solution : We begin with choosing a figure having a right angle. Fig (A) does not have any right angle. Fig (B) has a right angle. Now, we try to fit other pieces in fig. (B). We get fig (D) fitting into it; as shown :



We finally select fig. (E) fitting into this combination to complete the square; as shown :



∴ Figures (B), (D) & (E) together form a square.
Hence, alternative (*b*) is the answer.

A yet another type of problems on construction of squares is discussed below, in the following example.

Example 3 : ***Given below is a set of five alternative figures marked (A), (B), (C), (D) and (E). Select the figure which does not fit into any of the remaining alternative figures to form a complete square.***

Solution : Clearly, fig. (A) fits into fig. (E) to form a complete square and also, fig. (B) fits into fig. (D) to form a complete square as shown :

Fig. (C) does not fit in any of the alternative figures to form a square. Therefore, fig. (C) is the answer.

Similar to the construction of squares, we have problems on construction of equilateral triangles. The solving of such problems will become easier after studying the following example.

Example 4 :

(*a*) ABD (*b*) ACE (*c*) ACD (*d*) CDE

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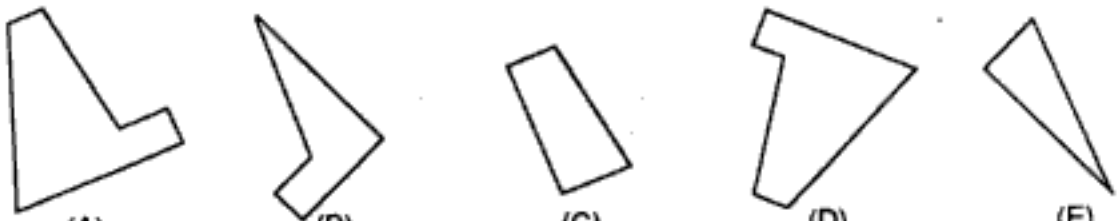
12. 

(A) (B) (C) (D) (E)

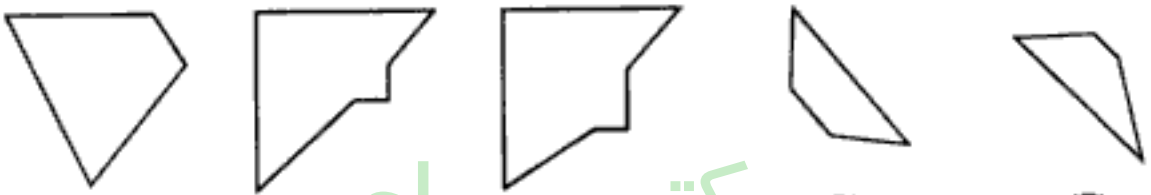
(a) ABC (b) BCD (c) CDE (d) BDE

(Hotel Management, 1993)

13. 

(A) (B) (C) (D) (E)

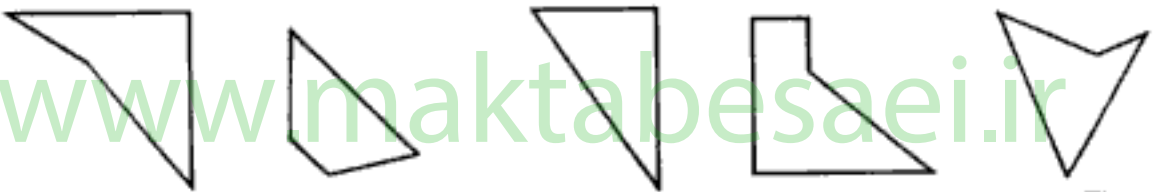
(a) ACD (b) ADE (c) ABE (d) ABD

14. 

(A) (B) (C) (D) (E)

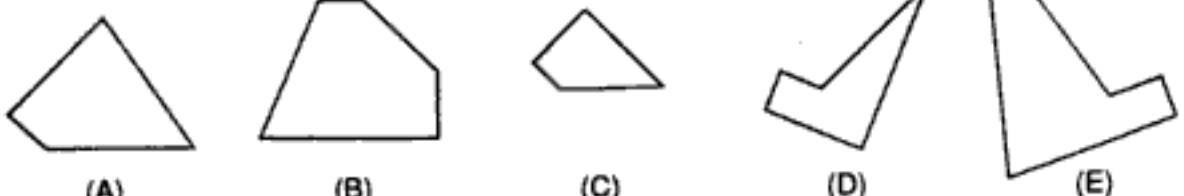
(a) ABC (b) BCD (c) ACD (d) CDE

(Hotel Management, 1993)

15. 

(A) (B) (C) (D) (E)

(a) ABE (b) ABC (c) BCE (d) BCD

16. 

(A) (B) (C) (D) (E)

(a) ABD (b) BCD (c) CDE (d) BCE

(Hotel Management, 1993)

17. 

(A) (B) (C) (D) (E)

(a) ABD (b) ABE (c) BCD (d) BDE

24. 

(A) (B) (C) (D) (E)

(a) ACD (b) ABD (c) BCD (d) CDE

(M.B.A. 1994)

25. 

(A) (B) (C) (D) (E)

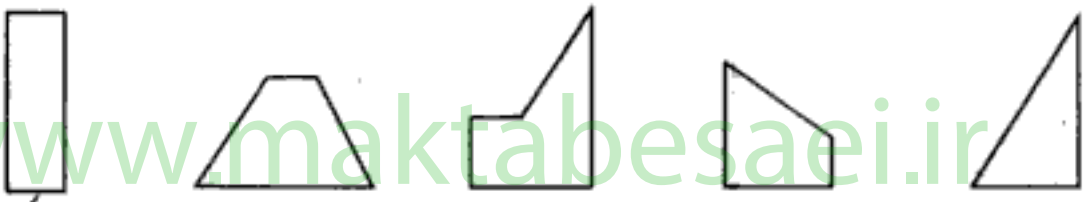
(a) ADE (b) ACE (c) BCE (d) BCD

26. 

(A) (B) (C) (D) (E)

(a) ABC (b) BCD (c) ACD (d) CDE

(Hotel Management, 1993)

27. 

(A) (B) (C) (D) (E)

(a) ABC (b) ACD (c) BCE (d) CDE

28. 

(A) (B) (C) (D) (E)

(a) ABD (b) BCE (c) ACD (d) BDE

(Hotel Management, 1993)

Directions : ***In questions 29 to 33, five alternative figures, marked (A), (B), (C), (D) and (E) are given. From these five figures, we can get two pairs of figures which form squares. You have to select the odd figure which does not fit in any of the other alternative figures to form a complete square.***

29. 

(A) (B) (C) (D) (E)

44. 

(A) (B) (C) (D) (E)

(a) ACE (b) ABD (c) BDE (d) CDE

45. 

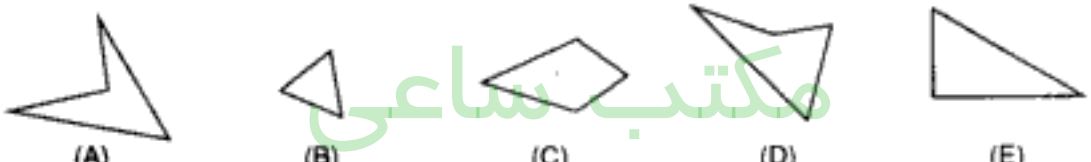
(A) (B) (C) (D) (E)

(a) ABC (b) ACE (c) BCD (d) BDE

46. 

(A) (B) (C) (D) (E)

(a) BCD (b) ABD (c) CDE (d) ABE

47. 

(A) (B) (C) (D) (E)

(a) ABD (b) BCD (c) BDE (d) CDE

48. 

(A) (B) (C) (D) (E)

(a) ABC (b) ACE (c) BDE (d) CDE

49. 

(A) (B) (C) (D) (E)

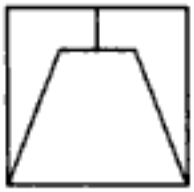
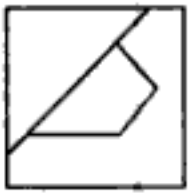
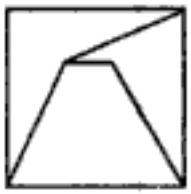
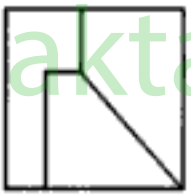
(a) BCD (b) ACD (c) CDE (d) BDE

50. 

(A) (B) (C) (D) (E)

(a) ABC (b) BCD (c) ABD (d) ABE

ANSWERS

1. (d) 
2. (b) 
3. (b) 
4. (d) 
5. (d) 
6. (c) 
7. (d) 
8. (c) 
9. (c) 
10. (c) 
11. (d) 
12. (c) 
13. (b) 
14. (d) 
15. (a) 
16. (b) 
17. (b) 
18. (c) 
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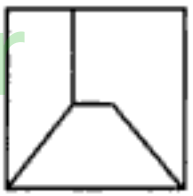
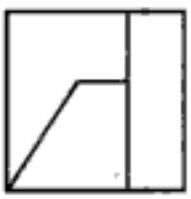
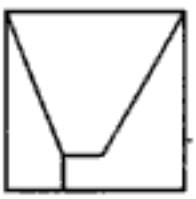
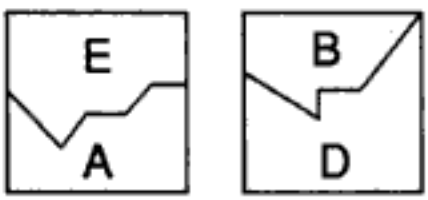
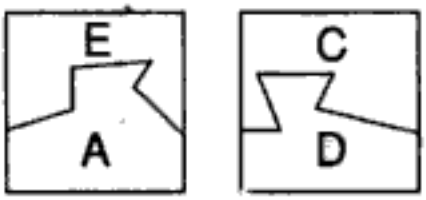
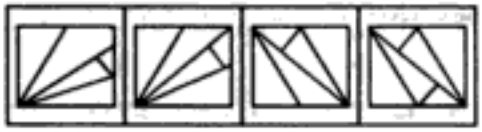
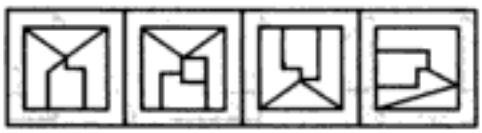
20. (d) 
21. (a) 
22. (a) 
23. (b) 
24. (a) 
25. (d) 
26. (a) 
27. (b) 
28. (b) 
29. (c) 

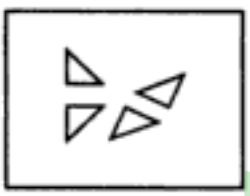
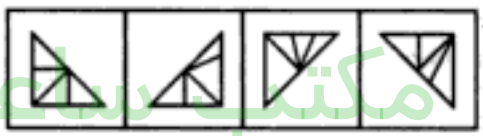
30. (B) 

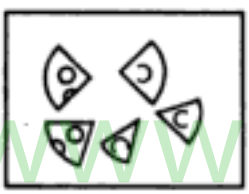
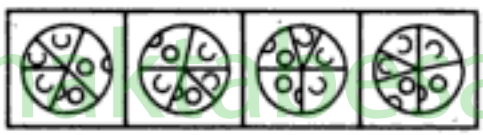
6. 
(X)

(a) (b) (c) (d)
(C.B.I. 1994)

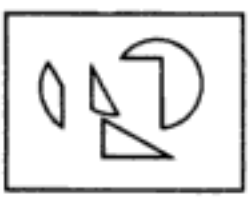
7. 
(X)

(a) (b) (c) (d)
(Asstt. Grade, 1994)

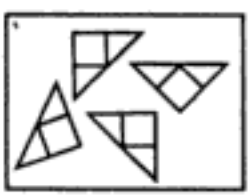
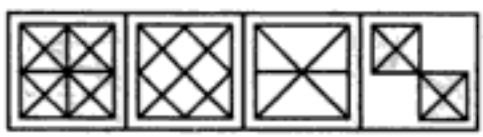
8. 
(X)

(a) (b) (c) (d)
(Clerks' Grade, 1995)

9. 
(X)

(a) (b) (c) (d)
(I. Tax, 1994)

10. 
(X)

(a) (b) (c) (d)
(C.B.I. 1995)

11. 
(X)

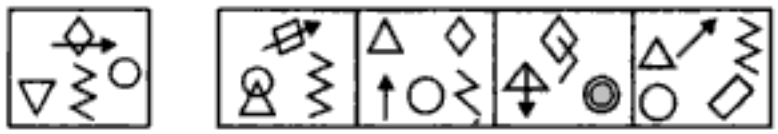
(a) (b) (c) (d)
(Central Excise 1995)

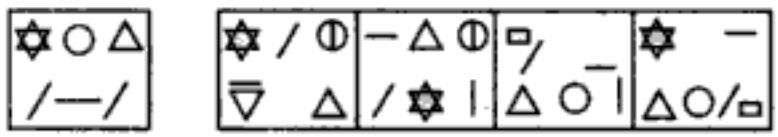
12. 
(X)

(a) (b) (c) (d)
(I. Tax & Central Excise, 1996)

13. 
(X)

(a) (b) (c) (d)
(C.B.I. 1994)

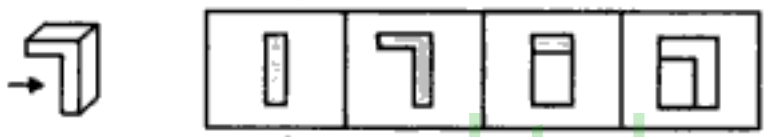
29. 
(X) (a) (b) (c) (d)
(Auditors' Exam, 1993)

30. 
(X) (a) (b) (c) (d)
(Asstt. Grade 1994)

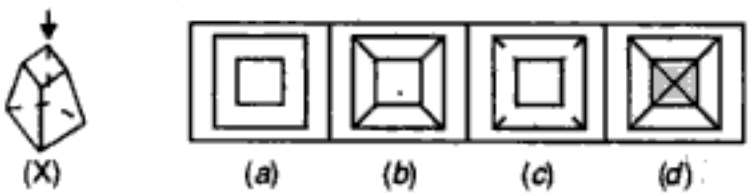
31. 
(X) (a) (b) (c) (d)
(U.D.C. 1994)

32. 
(X) (a) (b) (c) (d)
(U.D.C. 1993)

33. The figure of a solid marked 'X' is given below followed by four alternatives (a), (b), (c) and (d). If the solid is viewed in the direction of the arrow, which one of the four alternatives will represent the true view?

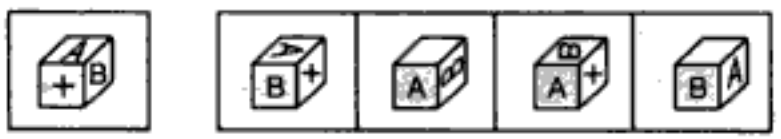

(X) (a) (b) (c) (d)
(Railways, 1993)

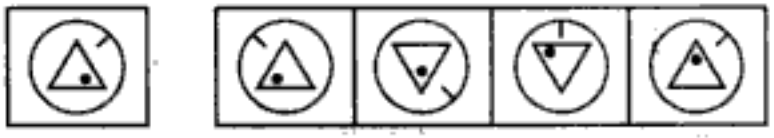
34. The pictorial view of the frustum of a square pyramid is shown in fig. X. Its top view, when viewed in the direction of the arrow, will look like which of the given alternatives (a), (b), (c) and (d) ?


(X) (a) (b) (c) (d)
(S.C.R.A. 1993)

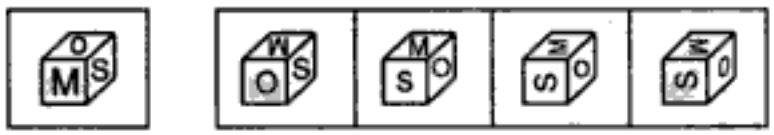
Directions (Questions 35 to 38) : In each of the following questions, find out how will the key figure (X) look like after rotation?

35. 
(X) (a) (b) (c) (d)
(Asstt. Grade, 1994)

36. 
(X) (a) (b) (c) (d)
(Asstt. Grade, 1994)

37. 
(X) (a) (b) (c) (d)

(Asstt. Grade 1993)

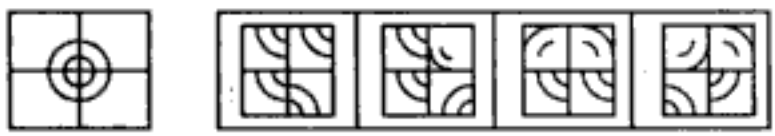
38. 
(X) (a) (b) (c) (d)

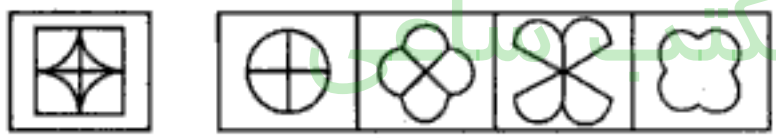
(C.B.I. 1993)

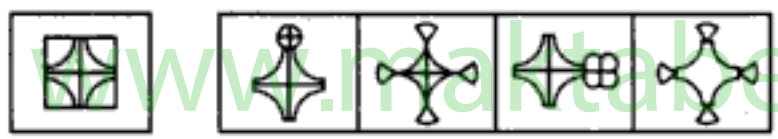
39. 
(X) (a) (b) (c) (d)

(U.D.C. 1994)

Directions ***(Questions 40 to 42) : Which figure is the rearrangement of the parts of the given figure ?***

40. 
(X) (a) (b) (c) (d)

41. 
(X) (a) (b) (c) (d)

42. 
(X) (a) (b) (c) (d)

(Asstt. Grade 1993)

ANSWERS

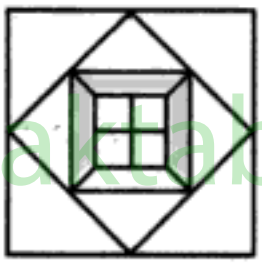
1. (a)	**2.** (a)	**3.** (b)	**4.** (c)	**5.** (b)	**6.** (c)	**7.** (b)	**8.** (c)	**9.** (a)	**10.** (c)
11. (b)	**12.** (b)	**13.** (a)	**14.** (d)	**15.** (c)	**16.** (a)	**17.** (d)	**18.** (c)	**19.** (c)	**20.** (a)
21. (a)	**22.** (c)	**23.** (b)	**24.** (c)	**25.** (b)	**26.** (d)	**27.** (b)	**28.** (a)	**29.** (c)	**30.** (b)
31. (b)	**32.** (d)	**33.** (c)	**34.** (c)	**35.** (b)	**36.** (b)	**37.** (b)	**38.** (d)	**39.** (b)	**40.** (a)
41. (a)	**42.** (a)								

PRACTICE QUESTION SET

1. In the adjoining figure, dots are arranged in a special way. How many rows in all would be having 4 dots in each?

(A) 3 (B) 5 (C) 7 (D) 9

2. What is the minimum number of colours required if the following figure is to be coloured such that no two adjacent sides have the same colour?

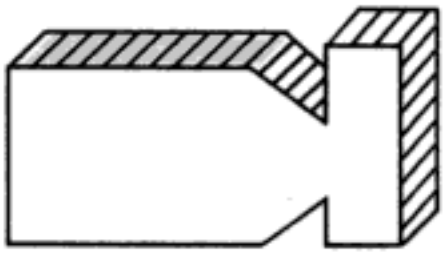


(A) 2 (B) 3 (C) 4 (D) 5

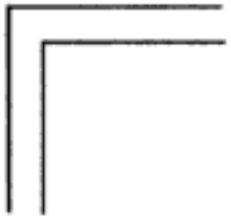
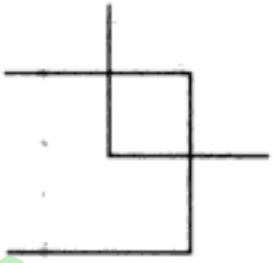
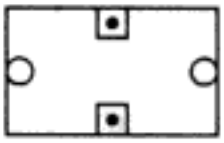
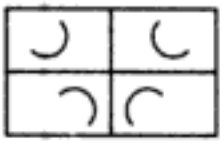
3. A cube is to be coloured in such a way that no two opposite faces have the same colour. The minimum number of colours required is

(A) 1 (B) 2 (C) 3 (D) 6

4. How many faces does the figure shown have?



(A) 6 (B) 12 (C) 13 (D) 14

	Question figures (Col. I)	Question figures (Col. II)
10.		(B) 
11.		(C) 
12.		(D) 
13.		(E) 
14.		(A) 
15.		(B) 
16.		(C) 

21. HNP : PDA : : DLP : ?

(A) PJG (B) CDP
(C) CLP (D) PME
(E) PHE

22. BPM : GNJ : : ? : AKD

(A) FPO (B) FPM
(C) HPB (D) LPH
(E) KPD

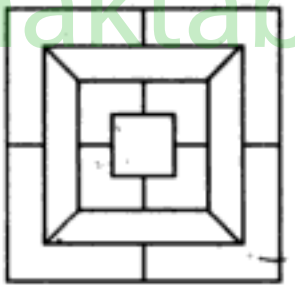
23. AOE : ? : : GMA : NKM

(A) KLM (B) KLF
(C) OBM (D) KMN
(E) KLO

24. A cube is coloured in such a way that each pair of its adjacent sides have the same colour. What is the minimum number of colours you require?

(A) 1 (B) 2 (C) 3 (D) 4

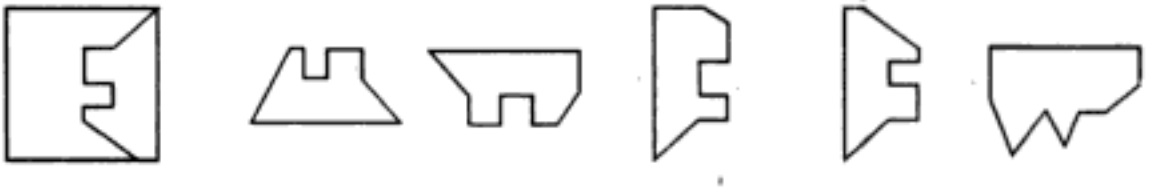
25. What is the minimum number of colours required to fill the spaces in the diagram without the adjacent sides having the same colour?



(A) 2 (B) 3 (C) 4 (D) 6

Directions : ***In questions 26 to 30 one part of a square is on the Left side of the line as Problem Figure and other part of the square is one of the five Figures written as Answer Figures. The correct answer figure will complete the square of the Problem Figure by rotating in any way. Choose the correct figure.***

26.



A B C D E

38. DISCARD

(A) DRACSID (B) DꓤAƆꙄID

(C) DIꙄCAꓤD (D) DIꙄCAꓤD

39. SNACK

(A) ꙄNAƆK (B) ꙄИAƆK

(C) SNACK (D) ꙄИACK

40. AFGANISTAN

(A) AFGANISTAИ (B) AFGANISTAN

(C) AꟻGANISTAИ (D) AFGANISTAИ

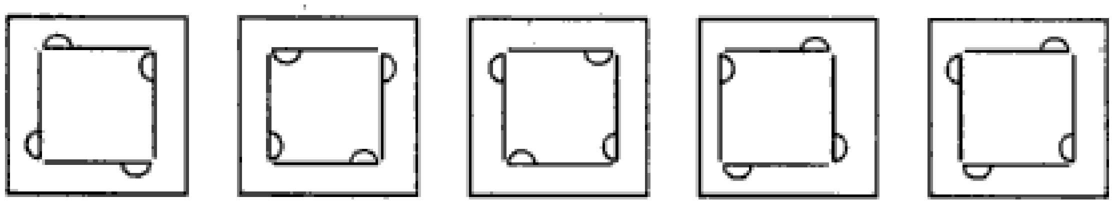
41. T3P2Y5

(A) T3P2Y5 (B) T3P2Y5

(C) TƐP2Y5 (D) TƐP2Y5

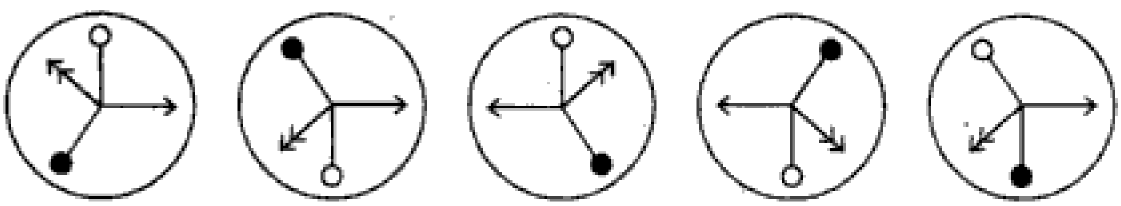
In problems 42 to 44 select the correct water image of fig. (X) from amongst the four alternatives provided with each figure.

42.



(X) (a) (b) (c) (d)

43.



(X) (a) (b) (c) (d)

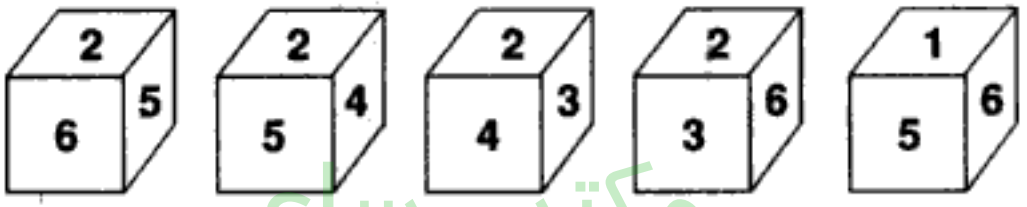
44.

(X) (A) (B) (C) (D)

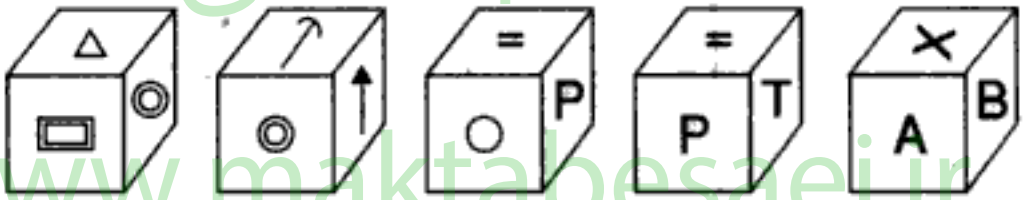
Directions :** ***Each of the questions 45 to 48 has 5 views of some cubes. Determine how many different cubes are involved in each case. Mark the answers as follows.

(A) If only one cube is involved;
(B) If two cubes are involved;
(C) If three cubes are involved;
(D) If four cubes are involved;
(E) If five cubes are involved.

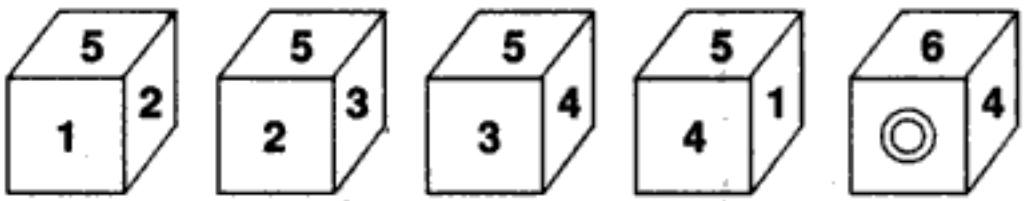
45.



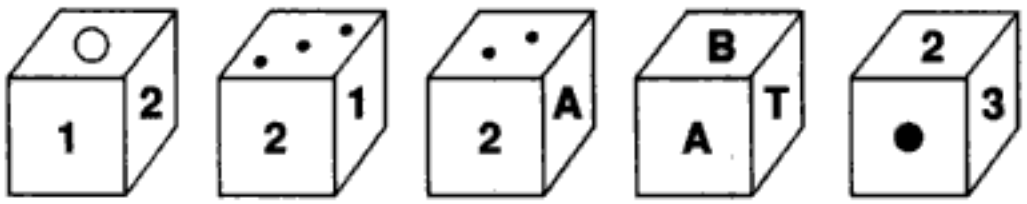
46.



47.

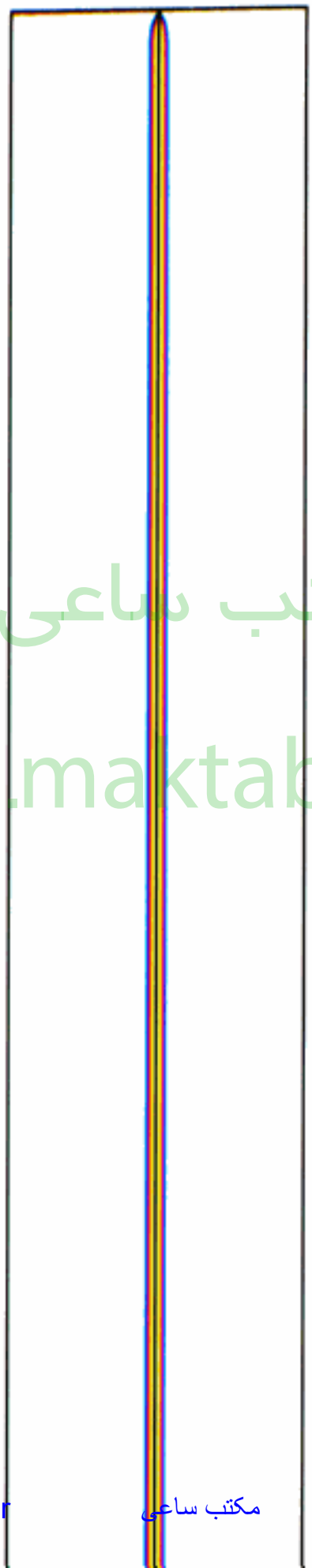


48.

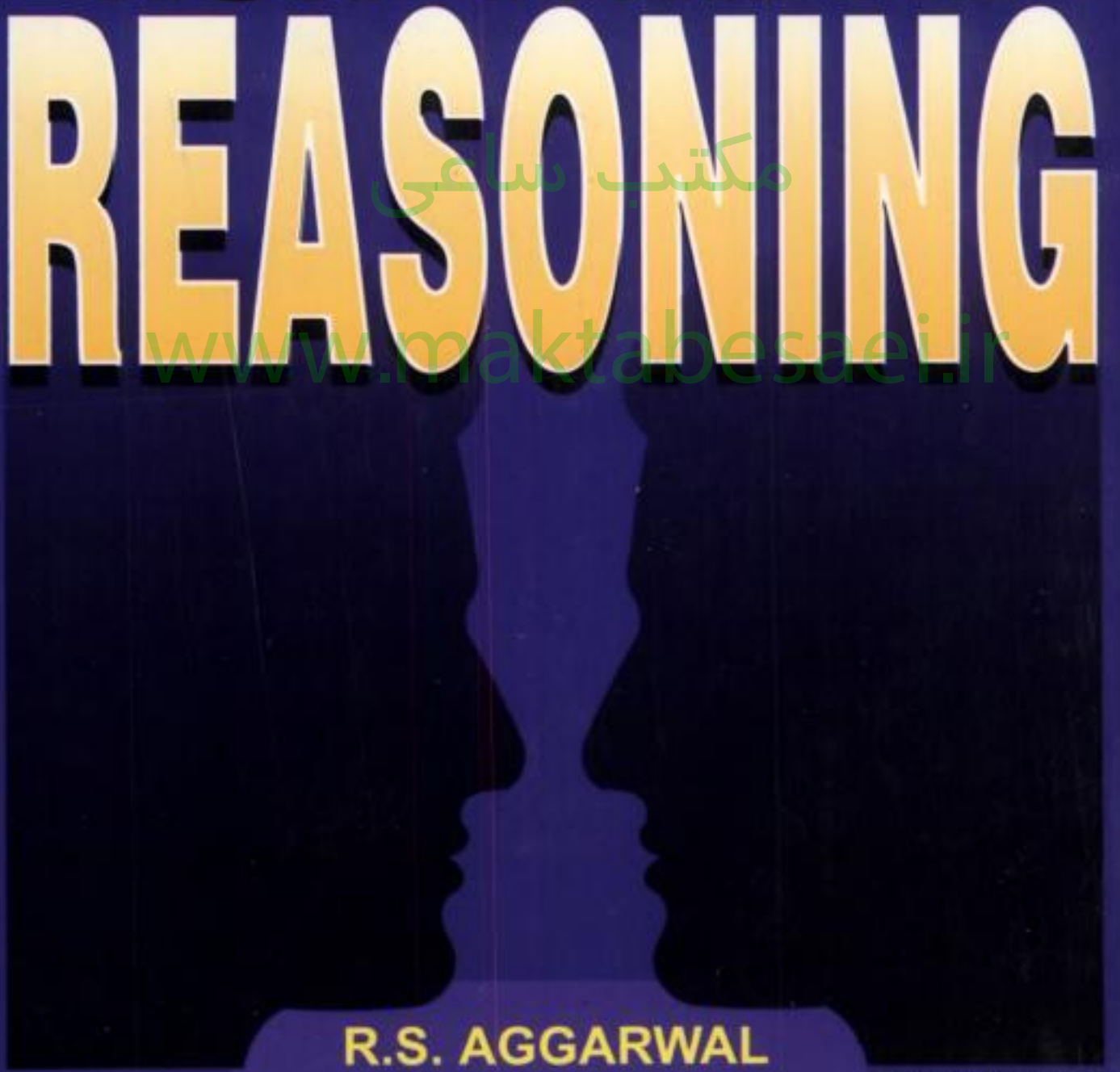


*The procedure for solving this type of questions is by selecting two such cubes which have all the entries different. Now by the combination of these two we obtain 1 cube. Now, imagine this cube to be rotated in different ways to form other cubes one by one. In case it can not be placed in any one of these ways, then the new cube is combined with another one to form a complete cube. The procedure is continued to get all the different cubes involved.

Direction : *Questions 49 to 51 are based on the following figure.*



A MODERN APPROACH TO VERBAL & NON-VERBAL REASONING



R.S. AGGARWAL