MODULE - 4 (B2)

1. What gives the color of an LED?

a) The plastic it is encased in
 # b) The active element
c) The type of gas used inside it

2. A germanium diode is used for:

a) rectification
 # b) voltage stabilization
c) modulation

3. Why is a diode put in parallel with an LED?

 # a) To protect it from AC
b) So it will work only above a certain voltage
c) So it will work only below a certain voltage

4. When testing the forward bias of a diode with a multimeter:

a) the positive lead of the ohmmeter is placed on the cathode
 # b) the positive lead of the ohmmeter is placed on the anode
c) it does not matter which terminal the positive lead of the ohmmeter is placed

5. In an NPN transistor the P is the:

a) collector
 # b) base
c) emitter

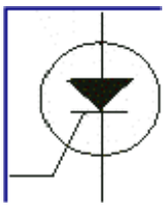
6. The output of a tachogenerator is:

 # a) proportional to speed of rotation
b) proportional to position
c) proportional to acceleration

7. AC power is supplied to:

a) torque receiver only
b) torque transmitter only
 # c) both the torque receiver and torque transmitter

8. This is a diagram of:



a) a TRIAC
 # b)an SCR
c) a Schottky diode

9. How is a PCB protected after manufacture?

a) With non-conductive varnish
b) With wax
 # c) By conformal coating

10. A differential synchro:

a) can only be used as a transmitter

b) can only be used as a receiver

 # c) can be used as either a transmitter or a receiver

11. Which of the following describes the characteristics of a Thyristor?

a) High voltage handling

 # b) High current handling

c) High power handling

12. A semiconductor doped with an element having a valency of 5 will produce:

 # a) an N type material

b)a P type material

c)either an N type or a P type depending on what type of semiconductor material is used

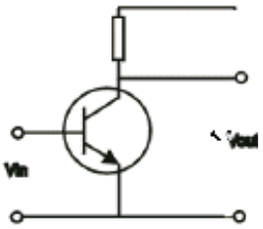
13. What are the ideal characteristics of an Op Amp?

a) Infinite gain, infinite input Impedance and infinite output impedance

b)Low gain, infinite input Impedance and zero output impedance

 # c)Infinite gain, infinite input Impedance and zero output impedance

14. How is the amplifier in the diagram shown wired?



a) Common base

 # b) Common emitter

c) Common collector

15. What gate does the following Boolean expression represent :

F = A.B.C

 # a) AND

b) OR

c) NOT

16. What gate does the following Boolean expression represent :

F = A+B+C

a) NOT

b) NOR

 # c) OR

17.To decrease the voltage gain of a common emitter amplifier you would increase the resistance in the:

a) base circuit

 # b) collector circuit

c) emitter circuit

18. A resolver has:

\# **a) 2 coils on the rotor and 2 coils on the stator**
b) 3 coils on the rotor and 2 coils on the stator
c) 2 coils on the rotor and 3 coils on the stator

19. The 'null' point on a control synchro is when the two rotors are:

\# **a) at 90o to each other**
b) parallel to each other
c) wired in series

20. A FET when compared to a junction transistor is:

a) low impedance
\# **b) high impedance**
c) current operated

21. What type of diode would be used to stop voltage spikes across a coil of a relay?

a) Gunn diode
b) Schottky diode
\# **c) Double acting diode**

22. A silicon diode, when compared to a germanium diode has:

\# **a) a higher forward bias voltage**
b) less forward bias voltage
c) the same forward bias voltage

23. A zener diode is used for:

a) rectification
\# **b) voltage stabilization**
c) modulation

24. A multi-layer PCB has:

a) one layer on either side
\# **b) two or more layers on one or both sides**
c) two or more layers connected in series

25. When a servomotor overshoots after a step input and oscillates it is:

a) over damped
\# **b) under damped**
c) critically damped

26. The rotor of a desynn indicator is

a) an electromagnet
\# **b) a permanent magnet**
c) an AC magnet

27. The position feedback from a potentiometer is :

\# **a) anti-phase**
b) in phase
c) 90 degrees out of phase

28. A differential synchro has:

\# **a) 3 phase stator, 3 phase rotor**
b) single phase stator, 2 phase rotor
c) 3 phase stator, single phase rotor

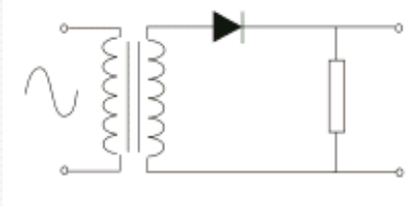
29. When a servomotor has stopped, the rate feedback from a tachogenerator is :

 # a) zero
b) maximum and in phase
c) maximum and anti-phase

30. A tachogenerator is usually used for:

 # a) rate feedback
b) angular feedback
c) position feedback

31. What is this circuit?



 # a) Half wave rectifier
b) Full wave rectifier
c) Flywheel diode

32. Differential synchros have:

a) a transmitter only
b) a receiver only
 # c) a transmitter and a receiver

33. In an integrated circuit, the components are mounted:

a) by means of wires connecting them
 # b) by metal oxide film
c) by metal screws

34. This symbol is:

 # a) a diode
b) a triac
c) a transistor

35. One characteristic of the emitter follower is:

 # a) low resistance output
b) low current amplification
c) high voltage amplification

36. A reduction from the optimum setting of the velocity feedback in a servo loop could cause:

a) low servo gain
 # b) instability
c) slow response

37. In a torque synchro system, the power supply is connected to

a) the rotor windings of the transmitter only
\# b) the rotor windings of both the transmitter and receiver
c) the stator windings of the transmitter

38. The phase difference between the supplies of a two phase induction motor is:

a) 180º
\# b) 90º
c) 0º

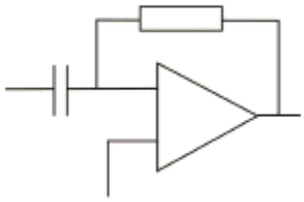
39. To reduce overshoot errors in a synchro:

a) the system will have position feedback
\# b) the system will have velocity feedback
c) the gain of the amplifier is increased

40. A synchro transformer is used to:

\# a) derive an error voltage from a synchro transmitter signal and a shaft position
b) obtain a 26 volt AC reference
c) add the output of two synchro transmitters

41. This is a diagram of a:



\# a) differentiator
b) integrator
c) adder

42. Reversal of the complete power to a torque synchro system will:

\# a) have no effect
b) cause reverse rotation of the receiver rotor
c) displace the receiver rotor by 180o

43. The power supply to a torque synchro system is:

\# a) AC
b) DC
c) AC or DC

44. This symbol is:

a) an LED
b) a laser diode
\# c) a photodiode

45. When a positive voltage is applied to the base of a normally biased n-p-n common emitter amplifier

a) the emitter current decreases
 # b) the collector voltage goes less positive
c) the base current decreases

46. An amplifier current gain will be slightly less than 1, but its voltage gain will be high, if it is connected in the:

 # a) common base configuration
b) common emitter configuration
c) common collector configuration

47. An open loop system is one which has:

 # a) no direct feedback loop
b) rate feedback loop
c) position feedback only

48. Mechanical friction in a servo results in:

a) reduced gain
 # b) increased damping
c) increased inertia

49. The position feedback signal is:

a) in phase with the input demand signal
 # b) in anti-phase with the demand signal
c) phase advanced by 90o with respect to the input signal

50. A servo system that overshoots and oscillates is:

 # a) under damped
b) over damped
c) critically damped

51. The power supply to a torque synchro system is connected to:

a) the transmitter stator
b) the transmitter rotor only
 # c) the transmitter and receiver rotors

52. If the rotor of the receiver in a torque synchro system was prevented from aligning with the transmitter rotor, then:

a) the transmitter rotor will turn to align with the receiver rotor
b) the receiver will overheat
 # c) a high current will flow in the stator windings

53. A zener diode:

 # a) stabilizes voltage at a predetermined level
b) allows current to flow in one direction
c) acts like a switch

54.The common collector amplifier is sometimes called the emitter follower circuit because:

a) the emitter current follows the collector current
 # b) the emitter voltage follows the base voltage
c) the emitter voltage follows the collector voltage

55. In a toroidal resistance transmitter indicator system, the power supply is connected to

 # a) the brushes
b) the resistor slab
c) the rotor

56. When a servo has reached its null and stopped, the velocity feedback is:

 # a) zero
b) maximum and anti-phase
c) maximum and in phase

57. The primary purpose of rate feedback in a positional servo system is to:

a) ensure minimum response time
 # b) prevent excessive overshoot
c) ensure system linearity

58. In an AC rate servo, a steady input will result in the servomotor:

a) oscillating about a new datum
 # b) rotating at a constant speed
c) rotating to a new datum position

59. An E&I bar output at datum has:

a) no induced voltage in the secondary windings
b) an imbalance of voltages in the secondary windings
 # c) equal and opposite voltages induced in the secondary

60. A non-inverting op-amp:

a) has a non-inverting input and an inverting output
b) has an inverting input and a non-inverting output
 # c) a non-inverting input connection only

61. Amplifiers may be classified as:

a) common emitter or common collector amplifiers
b) voltage amplifiers or impedance amplifiers
 # c) voltage amplifiers or power amplifiers

62. What is a shottky diode used for?

 # a) Very high frequency applications
b) Stabilsation
c) Rectification

63. The result of cross connecting two of the transmission leads in a torque synchro system and then turning the rotor of the transmitter 60º clockwise would be:

a) the receiver would move 60o clockwise
b) the receiver would move 120o anticlockwise
 # c) the receiver would move 60o anticlockwise

64.The control windings of a two phase servomotor is supplied with AC voltage of:

a) constant amplitude
b) variable phase
 # c) variable amplitude, variable phase

65. In a torque synchro that includes a differential synchro the power supply is connected to:

a) the transmitter rotor only
 # b) the transmitter and receiver rotors only
c) all three rotors

66. A differential synchro rotor has:

 # a) three windings
b) two windings
c) one winding

67. If the rotor of a control synchro sticks:

a) the system hunts
 # b) high current will flow
c) the position feedback will oscillate

68. With the reversal of the connections to the rotor of the transmitter of a: torque synchro, the position of the receiver rotor will be:

a) unchanged
b) changed by 120º
 # c) changed by 180º

69. The application of a 'stick-off' voltage to a control synchro servo system is :

a) to overcome the effect of static friction
b) to overcome the effect of viscous friction
 # c) to prevent alignment to a false null

70. When removing a microprocessor :

a) no damage is done by static discharge
 # b) considerable damage can be done by static discharge
c) ensure the power is OFF to avoid static discharge

71. An amplifier can provide both voltage gain and current gain when it is connected in the:

a) common base configuration
 # b) common emitter configuration
c) common collector configuration

72. How do you increase voltage gain of an amplifier?

a) decrease base circuit bias
 # b) decrease input resistance
c) increase input resistance

73. In a resolver synchro the stator windings are electrically displaced by:

 # a) 90º
b) 120º
c) 180º

74. A servo system may include a brake, an automatic trim system is one example where a brake is used. The brake is:

a) applied during trimming to prevent oscillations about the demand position
 # b) applied when trimming is complete to prevent stabilizer creep
c) applied during trimming to prevent servo runaway

75. A resolver synchro output is obtained from a rotor with

a) one single coil
b) three coils at 120o
 # c) two coils at 90o

76. In a control synchro the stator current ceases to flow when

a) the CT rotor is at null
b) when the two rotors are aligned
 # c) when power is removed

77. In a speed control servo system (rate control), the purpose of the tachogenerator is:

a) to make the velocity proportional to servo demand
b) to make the deflection proportional to servo demand
 # c) to make it run at constant speed

78. The result of reversing the rotor connections to the receiver of a torque synchro system is that the rotor position:

a) is unchanged
b) is changed by 120º
 # c) is changed by 180º

79. The rotor of a torque synchro indicator is:

 # a) supplied with an excitation voltage
b) short circuited
c) connected in series with the transmitter stator coil

80. When a hole diffuses from a p-region to the n-region it:

a) becomes a minority carrier in the n-region
b) lowers the potential barrier
 # c) raises the potential barrier

81. How are the pins numbered on an op-amp IC?

 # a) counter clockwise from the dot
b) clockwise from the dot
c) from left to right from the dot

82. To increase the output of a servo amplifier, it is necessary to:

 # a) reduce the tacho feedback
b) increase the tacho feedback
c) increase the position feedback

83. Angular displacement of the control coils with respect to the reference coils in a two phase induction motor are:

a) 0º, 180º
 # b) 90º, 270º
c) 90º, 120º

84. a two phase induction motor used in a servomechanism:

a) will always require a starter
 # b) is self starting under light loads
c) runs with no slip

85. A servomotor having only a tachogenerator as a feedback device will:

a) vary its speed with input error voltage
\# b) have a constant speed for any given input voltage
c) null out at a position dependant upon input error voltage

86. A hysteresis servo motor is used in a servomechanism because:

\# a) it has good starting characteristics
b) good speed/voltage relationship
c) low inertia

87. The null position of a torque synchro system is when:

\# a) the TX and TR rotors are parallel to each other
b) the TX and TR rotors are 90o to each other
c) the TX and TR rotors are 120o to each other

88. Reversal of two of the stator connections on a torque synchro receiver would cause:

a) the transmitter to become the receiver
b) the output to move the same direction as the input
\# c) the output to move the reverse direction to the input

89. An AC tachogenerator stator has:

a) two windings 180o apart
b) three windings 120o apart
\# c) two windings 90o apart

90. A junction diode:

\# a) has one p-n junction
b) is similar to a vacuum diode but cannot rectify
c) can handle only very small currents

91. When the rotor of an AC tachogenerator is stationary, the rotor has:

a) no circulating currents
\# b) low circulating currents
c) no magnetic fields

92. The output of a tachogenerator should be:

\# a) sinusoidal
b) exponential
c) linear

93. With a constant input to a speed control servo, the servo motor:

a) moves to a certain position
\# b) moves at a constant speed
c) oscillates, but otherwise does not move

94. A closed loop servomechanism:

a) must only have position feedback
b) must have both position and velocity feedback
\# c) can have either position or velocity feedback

95. Critical damping in a servomechanism is:

a) the point which allows just one overshoot before the load comes to rest

\# b) the amount of damping that results in the load just not oscillating

c) the critical damping required for the optimum damping of the servomechanism

96. In a control synchro system the power supply is connected to the:

\# a) transmitter rotor and amplifier

b) receiver rotor and amplifier

c) transmitter and receiver rotors

97. Reverse rotation of a control transformer rotor can be caused by:

\# a) connections between the transformer rotor and the amplifier reversed

b) connections to the transmitter rotor reversed

c) short circuit between two transmission lines

98. Velocity feedback:

\# a) opposes the demand input

b) assists the demand input

c) prevents dead space errors

99. Velocity lag can be decreased by:

a) introduction of an integrator

b) keeping the error detector (summing point) output as low as possible

\# c) decreasing the coulomb friction in the system

100. The junction barrier offers opposition to only:

a) holes in the p-region

b) free electrons in the n-region

\# c) majority carriers in both regions

101. An increase in velocity feedback will:

\# a) decrease the speed the load moves

b) increase the speed the load moves

c) have no effect on speed

102. A two phase motor will stop when:

a) the reference phase is reversed

b) the control phase is reversed

\# c) the control phase is zero

103. Rate feedback can be obtained from a:

a) synchro

\# b) tachogenerator

c) potentiometer

104. The frictional force in a servomechanism that is proportional to speed is Called:

a) stiction

b) coulomb friction

\# c) viscous friction

105. The 'null' point in a control synchro is when the two rotors are:

 # a) at 90º to each other
b) parallel to each other
c) wired in series

106. If two of the stator leads are cross connected in a control synchro system, a 25º clockwise rotation of the input rotor would result in the output rotor:

a) moving 25º clockwise
 # b) moving 25º anticlockwise
c) moving 180º to rectify the defect

107. Damping in a servomechanism is easier to apply if:

 # a) the mechanism is light and has low inertia
b) the mechanism is heavy and has high inertia
c) the mechanism is light and has high inertia

108. Reverse bias:

a) lowers the potential barrier
 # b) raises the potential barrier
c) greatly increases the majority carrier current

109. If the electrical connections to the feedback generator in a control : synchro system were disconnected, the:

a) motor would run in the wrong direction
b) input signal to the amplifier would reduce
 # c) system would tend to oscillate

109. An increase in servo amplifier gain:

a) reduces the speed of the system
 # b) increases system response
c) reduces tendency to hunt

110. In a control synchro the stator current ceases to flow when the:

a) CT rotor is at null
b) two rotors are aligned
 # c) power is removed

111. The term 'velocity lag' refers to a :

a) speed error
 # b) position error
c) acceleration error

112. The rotor of an AC tachogenerator:

a) has skewed slots
 # b) has a copper, brass or aluminium cylinder
c) rotates at constant speed

113. A servo system with transient negative velocity feedback:

 # a) is damped with little velocity lag
b) is damped with high velocity lag
c) is underdamped with high velocity lag

114. To reverse the direction of rotation of a two phase induction motor:

 # a) reverse the polarity of the control phase

b) reverse the polarity of both the control phase and reference phase

c) shift the reference by 90º

115. In a rate servo (speed control) the signal into the servo amplifier is:

a) input voltage plus tachogenerator output

 # b) input voltage minus tachogenerator output

c) input voltage plus position feedback voltage

116. Loss of DC to a servo amplifier causes the motor to:

a) run continuously

 # b) stop

c) reverse

117. Avalanche breakdown occurs when

a) forward current becomes excessive

b) forward bias exceeds a certain value

 # c) reverse bias exceeds a certain value

118. An AC servo demand can be converted to drive a DC motor by the introduction of a:

a) rectifier

b) modulator

 # c) demodulator

119. Synchro indicator systems are used when the indication is required to Move:

a) a fraction of the input distance

b) slower than the input rate

c) at the same rate as the input

120 A linear variable differential transformer is used to measure position feedback where:

a) 360º of rotation and high angular accuracy is required

b) accuracy is of limited importance but robust construction and reliability is important

 # c) an output whose phase is related to direction of movement and amplitude linear over a wide range

121. A low frequency sinusoidal input will cause a closed loop: servomechanism load to:

 # a) move to a demand position with no overshoot

b) move backwards and forwards at the input frequency

c) move to the demand position and then return to the datum position without any overshoot

122. To reduce oscillations about a demand position:

a) the amount of velocity feedback would be decreased

 # b) the amount of velocity feedback would be increased

c) the amount of position feedback would be increased

123. If a servo amplifier is suffering from drift:

 # a) the load would move to a new position, proportional to the drift and stay there

b) the load would move to a new position, proportional to the drift and then return back to the datum position

c) the load would oscillate about the datum position.

124. In a transient velocity feedback circuit, the tachogenerator output is summated with the demand voltage:

a) only when the load is slowing down

b) at all times when the load is moving

 # c) only when the load is speeding up or slowing down

125. Positive feedback applied to a servomechanism:

a) decreases the response of the system

b) opposes the demand signal

 # c) increases the response of the system

126. A differential synchro transmitter used for addition has:

a) the TDX S1 and S3 connections cross connected to the TX

b) the TDX S1 and S3 connections cross connected to the TR

 # c) the TDX R1, R3 and S1, S3 connections cross connected to the

127. If forward bias is increased from zero on a p-n junction, a rapid increase in current flow for a relatively small increase in voltage occurs:

 # a) only after the forward bias exceeds the potential barrier

b) when the flow of minority carriers is sufficient to cause an avalanche breakdown

c) when the depletion layer becomes larger than the space charge area

128. An LVDT has :

 # a) an output winding which is wound in series opposition

b) an input winding whose voltage will change with load movement

c) an output winding whose voltage and frequency is linear to load angular movement

129. A diode connected across a relay coil is used to:

a) allow the coil to energize with only one polarity

b) cause a delay in switching on

 # c) dissipate coil spikes on switch off

130. Differential transmitters are used to :

a) add or subtract two electrical signals

 # b) add or subtract a mechanical signal to an electrical synchro signal

c) increase the operating speed of the synchro receiver

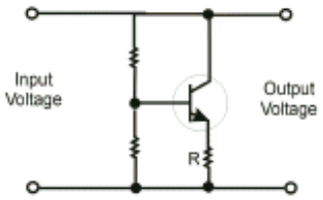
131. To convert a differential synchro from subtraction to addition you would:

a) reverse the reference phase supply

 # b) change over two rotor and stator connections

c) change over all three stator windings

132. What is resistor R used for?



a) Amplification
b) Bias
 # c) Stabilisation

133. When resolving a Cartesian input to a Polar output:
a) the inputs are a shaft angle and a voltage
b) the outputs are two voltages
 # c) the inputs are two voltages

134. To check the forward resistance of a diode with a multimeter, the lead connected to the positive terminal is put to the:
 # a) anode
b) cathode
c) either anode or cathode

135. A resolver synchro output is obtained from a rotor with:
a) one single coil
 # b) two coils at 90o to each other
c) three coils at 120o to each other

136. The input and output signals of a common emitter amplifier are:
a) equal
 # b) out of phase
c) in phase

137. The output of a resolver synchro is:
a) dependant upon the position of the rotor only
b) proportional to the speed of input rotation
 # c) a function of the rotor position and excitation voltage

138. The rotor of an autosyn position indicating system is:
a) a permanent magnet
 # b) an electromagnet
c) spring controlled

139. A band pass filter excludes frequencies:
a) above the frequency required only
b) below the frequency required only
 # c) above and below the frequency required

140.The rotor of a magnesyn transmitter is:
a) a dc electromagnet
 # b) a permanent magnet
c) an ac electromagnet

141. In general the accuracy of a synchro system increases if the:

a) stator current is high

 # b) stator current is low

c) rotor current is high

142. Torque synchro systems are normally used when the :

 # a) mechanical load is low

b) mechanical load is high

c) system accuracy is of extreme importance

143. In a resolver synchro the stator windings are electrically disposed by:

 # a) 90º

b) 120º

c)180º

144. The induced signal in the output coils of the magnesyn system:

a) de-saturates the soft iron core

b) damps the pointer oscillations

 # c) is of a value of 800 Hz

145. The direction of the induced (secondary) magnetic field in a synchro Transmitter:

a) is 90º to the primary magnetic field

b) in the same direction as the primary field

 # c) is in the opposite direction to the primary field

146. A transistor is said to be in the quiescent state when:

 # a) no signal is applied to the input

b) it is unbiased

c) no currents are flowing

147. In an unbiased p-n junction, current flow is:

a) due to the diffusion of minority carriers only

 # b) zero, because no charges are crossing the junction

c) zero, because equal but opposite currents are crossing the junction

148. A common base transistor circuit is so called because:

a) the base region is located between the emitter and collector region

b) the base is n-type material

 # c) the base is common to the emitter and collector circuits

149. What device transfers one energy type to another?

a) Transmitter

 # b) Transducer

c)Transponder

150. Which way does conventional current flow in a PNP junction?

a) Collector to emitter

 # b) Emitter to base

c) Collector to base

151. Electrical power is supplied to a synchro rotor:

a) directly

 # b) through slip rings

c) through a commutator

152. The purpose of a flywheel incorporated in a synchro is to:

a) increase the driving force

 # b) prevent oscillations

c) prevent insect ingress

153. In an operational amplifier, the two input waves are the same amplitude, same frequency, but exactly anti-phase. What would the output be?

 # a) Double

b) Zero

c) Half

153. A thyristor has which of the following?

a) High resistance when switched on

 # b) High resistance when switched off

c) A positive temperature coefficient

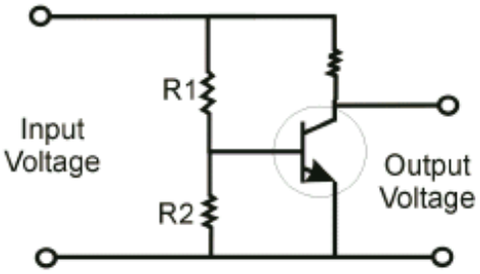
154.On an integrated circuit the hole in the top left corner is pin 1. The pins are counted:

a) clockwise

 # b) anticlockwise

c) from left to right

155. With reference to the circuit shown below, how is the transistor configured?



 # a) Common emitter

b) Common collector

c)Common base

156. In the circuit diagram above, R1 and R2 are used to:

a) set the transistor gain

 # b) set the DC bias level

c) increase the base voltage

157. In a synchro system, if two stator lines are crossed the receiver will

a) not be affected

b) be 180o out

 # c) reverse direction

158. In an E and I signal generator at datum, the voltage on the secondary Windings:

 # a) are equal and opposite

b) is maximum

c) is zero

159. In a synchro resolver, the stator coils are at what angle in relation to one another?

a) 45 degrees
b) 80 degrees
 # c) 90 degrees

160. In a synchrotel, the:

a) rotor coil is fixed and the stator coil moves
 # b) rotor coil and stator coil is fixed
c) stator coil is fixed and the rotor coil moves

161. On a PCB, a decoupling capacitor is used to get rid of transient currents between which points?

a) The electronic circuit and the aircraft ground
 # b) Interspaced along the circuit
c) The negative rail and the rest of the circuit

162. In an LED, what is used to make the colour?

 # a) The doping material
b) The electrons
c) The plastic lens cover

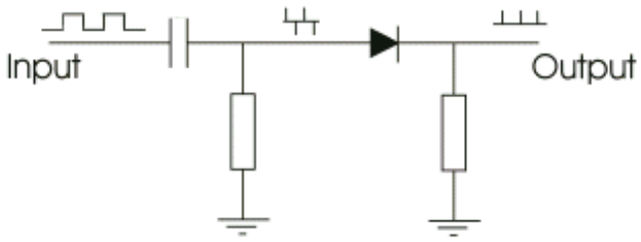
163. An atom with 5 electrons in its outer shell is part of :

 # a) an N type material
b) a P type material
c) a C type material

164. In a FET, the junction connections are called:

 # a) drain, source and gate
b) base, collector and emitter
c) drain, collector and junctions

165. With a small amplitude voltage, what type of diode would you use to produce the output waveform?



 # a) Shottky
b) Gunn
c) Zener

166. An increase in negative feedback to the servo amplifier

 # a) increases amplifier stability
b) decreases amplifier stability
c) has no effect

167. How is a push-pull transistor arrangement connected?

\# a) emitter to emitter
b) collector to collector
c) base to base

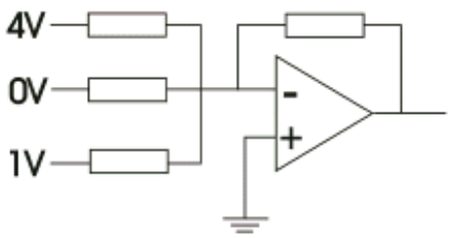
168. Thermal runaway in a transistor is caused by :

\# a) excessive heat causing maximum current flow
b) excessive heat causing minimum current flow
c) low heat causing minimum current flow

169. A single integrated circuit Op Amp has how many pins?

a) 4
b) 7
\# c) 8

170. What is the output of the amplifier shown below?



a) 0V
b) 3V
\# c) 5V

171. A thyristor is commonly used for:

a) voltage regulation
b) overvolts regulation
\# c) rectification

172. A diode which emits photons when conducting is a:

a) zener
b) varactor
\# c) light emitting

173. The electrodes of an SCR are:

a) anode, cathode, source
b) source, drain, gate
\# c) gate, cathode, anode

174. For conduction of a transistor the emitter junction is:

\# a) fwd biased
b) reverse biased
c) fwd or reverse as appropriate to the input signal

175. In a PNP transistor which way does conventional current flow:

a) base to emitter
b) collector to emitter
\# c) emitter to collector

176. Infinite gain, infinite input impedance & zero output impedance is characteristic of a:

a) Class A amp
b) Class B amp
 # c) Op amp

177. Forward voltage of a silicon diode is:

 # a) 0.6V
b) 0.2V
c) 1.6V

178. An advantage of a common emitter is:

a) it is a voltage follower
 # b) it has high power gain
c) it has high voltage gain

179. What amplifier is biased at cut off:

a) A
 # b) B
c) C

180. When testing a transistor with an ohmmeter, what is the resistance of the emitter/collector?

a) High resistance one way
 # b) High resistance both ways
c) Low resistance both ways

181. What diode gives off light photons when forward biased:

 # a) LED
b) Shottky diode
c) Gunn diode

182. A logic circuit with more than one gate will have:

 # a) one of 2 states of logic output
b) 2 or more outputs
c) an analogue output

183. Components on an integrated circuit are:

a) in the solid
b) don't need them
 # c) on the surface

184. What diode is used to stop power spikes in a coil?

 # a) Two directional zener diode
b) Shottky diode
c) Gunn diode

185. The anode of a diode is connected to a +4v DC supply and the cathode is connected to a +2v DC supply. The diode is:

a) forward biased not conducting
b) reverse biased not conducting
 # c) forward biased conducting

186. Using electron flow in a diode the current flows from:

a) Anode to Cathode

 # b) Cathode to Anode

c) Cathode to Base

187. A control surface position feedback signal is:

 # a) proportional to surface position

b) inversely proportional to surface position

c) non-linear

188. An E&I transformer out of datum has:

a) equal and opposite voltages in each windings

 # b) unequal and opposite voltages in both windings

c) no voltage in either winding

189. A gyro will provide:

a) rate feedback

b) velocity feedback

 # c) positional feedback

190. In a common collector circuit the output and input are:

a) out of phase by 90o

 # b) in phase

c) out of phase by 60o

191. In velocity feedback the signal is:

a) in phase

 # b) out of phase

c) equal to the error signal

192. When a hole diffuses from the p region to the n region:

a) it becomes a minority carrier in the n region

b) lowers the potential barrier

 # c) raises the potential barrier

193. A germanium diode is used for:

a) voltage stabilisation

 # b) rectification

c) signal detection

194. A germanium diode :

 # a) has a lower forward bias voltage than a silicon diode

b) has a higher forward bias voltage than a silicon diode

c) has the same forward bias voltage as a silicon diode

195. A VLSIC has:

a) less than 1000 gates

 # b) more than 1000 gates

c) more than 10,000 gates

196. A momentary input at the reset input of a flip flop will:

 # a) reset the true output to 0

b) reset the true output to 1

c) clock in new data from the data inputs

197. Which type of flip flop has only 1 data input:

a) RS
b) JK
 # c) D

198. A low pass filter has:

a) a capacitor in series and an inductor in parallel
 # b) a capacitor in parallel and an inductor in series
c) both capacitor and inductor in parallel

199. When you use an op amp as a buffer it has:

 # a) high input impedance and low output impedance
b) low input impedance and high output impedance
c) the same input an output impedance

200. What switches off a thyristor?

a) Remove the gate voltage
 # b) Remove supply voltage
c) Reverse bias gate

201. When an SCR is switched on it has

a) high resistance
 # b) low resistance
c) no change in resistance

202. What is required for the switching of a mono-stable multi-vibrator:

a) one trigger pulse to switch on and another to switch off
 # b) one trigger pulse to both switch on and off
c) one trigger pulse to switch on and two trigger pulses to switch off

203. A transistor at saturation has

a) high resistance
 # b) low resistance
c) zero resistance

204. A capacitor resistor coupled multistage amp lets

a) AC and DC pass to the next stage
 # b) AC pass only
c) DC pass only

205. An oscillator operating at its natural frequency has feedback which is

 # a) inphase
b) 90 degrees out of phase
c) 180 degrees out of phase

206. What type of diode when forward biased holes and electrons recombine producing photons?

a) gunn
 # b) LED
c) photodiode

207. What type of pulse is required to switch on a SCR?

 # a) positive
b) negative
c) positive and negative

208. Which mathematical operation is performed by a modulator amplifier?

a) Addition
b) Subtraction
 # c) Multiplication

209. What is meant by a bistable circuit?

 # a) The circuit has 2 stable states and will stay in which one it is put
b) The circuit has 2 stable states and will stay in both at the same time
c) The circuit has 1 stable state and it can be negative or positive

210. A zener diode is designed to operate:

 # a) above its breakdown voltage
b) below its breakdown voltage
c) either above or below its breakdown voltage

211. A JFET is:

 # a) voltage sensitive
b) current sensitive
c) either of the above depending on resistance in the circuit

212. A triac is a type of

 # a) thyristor
b) thermistor
c) transistor

213. If a junction diode is reverse biased too far, the output current would:

a) cease to flow
 # b) increase
c) reverse direction

214. An RC connected amp has:

a) no AC across
 # b) no DC across
c) even amounts of d.c and a.c across

215. When a PN junction is forward biased, it conducts via:

 # a) majority carrier
b) minority carrier
c) intrinsic carrier

216. Thermal runaway in a transistor refers to:

 # a) high current flow when temperature increases
b) low current flow when temperature increases
c) high current flow when temperature decreases

217. When is maximum voltage induced into the rotor of a control synchro transformer?

a) 90 degrees (null position)
 # b) 0 degrees
c) When spinning fast

218. Resistors and capacitors are used to couple stages of amplifiers so that:

a) only d.c can be applied

b) equal amounts of a.c and d.c can be applied

 # c) only a.c can be applied

219. An astable multivibrator is a:

 # a) free running vibrator

b) one which requires an input to switch on and off

c) one which requires no input whatsoever

220. Op amps use what power supply?

a) 26v a.c

 # b) 5v - 15v d.c

c) 26v d.c

221. The purpose of the fly wheel incorporated in a synchro:

a) is to increase the driving force

 # b) to prevent oscillations

c) to prevent insect ingress

222. In a slab desynn transmitter the:

a) pick-offs form part of the circuit resistance

 # b) pick-offs rotate on the slab resister

c) pick-offs are connected to a spark suppressor

223. If, in a servo system, the amplitude from the feedback system is below normal, the servo will:

 # a) oscillate

b) be sluggish in operation

c) be overdamped