

4. In a closed-loop control system, the controller
 - a. regulates the internal disturbances of the plant and keeps them under control
 - b. provides information about the actual plant output
 - c. reduces the difference between the input signal and the output signal and brings the output of the system to a desired value
 - d. determines the value of the error and reduces its effect on the system
5. We may infer from the text that open-loop control systems
 - a. should be used for systems in which unpredictable disturbances occur
 - b. should be used for systems in which the inputs are known in advance
 - c. are more complicated than closed-loop control systems
 - d. are more powerful than closed-loop control systems

C. Answer the following questions orally.

1. What part has automatic control played in the advancement of engineering?
2. What is a plant?
3. What are the internal and external disturbances?
4. What is the function of a feedback control system?
5. What is a servo system?
6. What is the mechanism of an open-loop control system based on?
7. What is an adaptive control system?

Part II. Language Practice

A. Choose a, b, c, or d which best completes each Item.

1. The most fascinating developments in adaptive control systems lie in the areas of pattern recognition and systems.

a. learning	b. operating .
c. analyzing	d. reading
2. An automatic compares the actual value of the plant output with the desired value, determines the deviation, and produces a control signal that will reduce the deviation to zero or to a small value.

a. amplifier	b. sensor
c. controller	d. transformer
3. A maintains the plant output constant at the desired value in the presence of external disturbances.

a. capacitor	b. compensator
c. resistor	d. regulator

4. In everyday life, occurs when we are aware of the consequences of our actions.
 - a. adaptation
 - b. regulation
 - c. feedback
 - d. control
5. Control systems without feedback are called.
 - a. closed-loop
 - b. open-loop
 - c. adaptive
 - d. learning

B. Fill in the blanks with the appropriate form of the words given.

1. Heat

- a. For high current levels, an external pass transistor may be required with sinks to reduce the effective thermal resistance.
- b. A heat coil is a protective device that grounds or opens a circuit, or does both, by means of a mechanical element that is allowed to move when the fusible substance that holds it in place is above a predetermined temperature by the current in the circuit.
- c. A heater connector is designed to engage the male terminal pins of a or cooling appliance.
- d. A heater transformer supplies power for electron-tube filaments or of indirectly heated cathodes.

2. Adapt

- a. An System is capable of accommodating unpredictable environmental changes, whether these changes occur within the system or external to it.
- b. The vagueness surrounding most definitions and classifications of adaptive systems is due to the large variety of mechanisms by which may be achieved.
- c. When high is called for most present-day requirements will be met by an identification-decision-modification system.

3. Accomplish

- a. The dynamic characteristics of a plant must be measured and identified continuously. This should be without affecting the normal operation of the system.
- b. When tied in with learning approaches, pattern-recognition techniques will adaptive-learning control.
- c. A business system may consist of many groups. Feedback methods of reporting the of each group must be established in such a system for proper operation.