

# 17561

**21718**

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) **Attempt any THREE of the following:** **12**
- i) Differentiate between open loop and closed loop system.
  - ii) Explain inherent flow characteristics of control valve.
  - iii) List types of temperature scales and give its ice point and boiling point.
  - iv) Describe metallic diaphragm guage with diagram.
- b) **Attempt any ONE of the following:** **6**
- i) Give the detailed classification of level measurement.
  - ii) Define the following
    - 1) Static error
    - 2) Accuracy
    - 3) Precision
    - 4) Callibration
    - 5) Resolution
    - 6) Dead zone

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- 2. Attempt any FOUR of the following:** **16**
- a) Explain ultrasonic flowmeter with neat labelled diagram.
  - b) Draw sketch of spring actuator with valve positioner.
  - c) Draw block diagram of cascade control system.
  - d) State working principle of bimetallic thermometer with advantages and disadvantages.
  - e) What are the elements of computer aided process control hardware? Explain.
  - f) Describe construction and working of bellows pressure gauge with sketch.
- 3. Attempt any FOUR of the following:** **16**
- a) List the types of thermal flowmeter. Explain construction and working of any one.
  - b) Describe the principle, construction and working of thermocouple used for temperature measurement.
  - c) Describe working of spring diaphragm actuator.
  - d) Give two applications of each of the following:
    - i) PLC
    - ii) DCS
  - e) Explain temperature control system with neat sketch.
- 4. a) Attempt any THREE of the following:** **12**
- i) State principle and draw a neat sketch of ultrasonic flowmeter.
  - ii) Draw and explain Dead weight tester.
  - iii) What are the factors to be considered for valve selection?
  - iv) Describe pneumatic controller.
- b) Attempt any ONE of the following:** **6**
- i) Describe construction and working of optical pyrometer for temperature measurement.
  - ii) Explain construction and working of ultrasonic method for level measurement with neat sketch.

**5. Attempt any FOUR of the following:****16**

- a) Enlist types of control valve. Give the function of valve actuator.
- b) Draw block diagram of Architecture of a programmable logic controller.
- c) Describe construction and working of rotating vane meter with neat sketch.
- d) Draw neat labelled diagram of Air purge method for level measurement.
- e) Explain PI and PD control with neat sketches.

**6. Attempt any TWO of the following:****16**

- a) Describe construction and working of magnetic flow meter with advantages and disadvantages.
  - b) Explain the block diagram of distributed control system.
  - c) List types of Bourdon tube and describe the c-type Bourdon tube with neat sketch.
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