

# 17561

11819

**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) Assume suitable data, if necessary.
- (6) 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) Define accuracy and sensitivity of an instrument.
- (ii) Define positive TCR and negative TCR. State seebeck effect.
- (iii) Enlist any four methods of level measurement of liquids.  
Draw diagram of capacitance level indicator.
- (iv) Draw diagram of rotating vanemeter and state it's principle.
- b) **Attempt any ONE of the following:** **6**
- (i) Draw a neat labelled diagram of C-type Bourdon tube and describe it's working.
- (ii) Explain cascade control system with block diagram.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Compare open loop system and closed loop system. (Any four)
  - b) How the pressure is measured with the help of LVDT.
  - c) Explain the factors to be considered while going for valve selection.
  - d) Draw the block diagram of PLC.
  - e) Describe the features of distributed control system. (Any four)
  - f) Distinguish between single seated and double seated valve. (Any four points)
- 3. Attempt any FOUR of the following:** **16**
- a) Draw the diagram radiation pyrometer and label it.
  - b) Give the principle of air purge system for level measurement.
  - c) Describe how a pressure gauge is calibrated with the help of dead weight tester.
  - d) Describe construction and working of ultrasonic flowmeter.
  - e) Differentiate between P.I.&D. Action in controller. (Any two)
- 4. a) Attempt any THREE of the following:** **12**
- (i) Explain with diagram liquid filled thermometer.
  - (ii) State the principle of a bimetallic thermometer. Draw its neat diagram.
  - (iii) Name the flow meter used for measuring the flow rate of highly viscous liquid. Explain its working.
  - (iv) With the help of neat diagram, describe the working of an electromagnetic flow meter.
- b) Attempt any ONE of the following:** **6**
- (i) Enlist types of control valve. Give the function of valve actuator.
  - (ii) Explain in brief the elements of computer aided measurement and control.

- 5. Attempt any FOUR of the following:** **16**
- a) Draw the diagram and explain working of thermal flow meter.
  - b) Explain sight glass method of level measurement.
  - c) State which method is used for level measurement for measuring level of liquid where no physical contact between the liquid and instrument is allowed describe with neat labelled diagram.
  - d) Explain with diagram strain gauge transducer.
  - e) Convert 1.5 bar into -
    - (i) Pascal
    - (ii) height of water column
- 6. Attempt any TWO of the following:** **16**
- a) Explain with diagram construction and working of pneumatic PID controller.
  - b) Explain inherent flow characteristics of control valve with diagram.
  - c) With neat sketch, explain the construction and working of a D.C.S. system used in process industries.
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