

22335

23124

3 Hours / 70 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 answer 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. **Attempt any FIVE of the following:** **10**
- Define active and passive transducer.
 - List any four units of temperature.
 - Define laminar flow and turbulent flow.
 - Sketch neat diagram of air pure level measurement.
 - State working principle of Piezoelectric effect.
 - Classify the following transducer on the basis of primary/secondary –
 - Bourdon tube
 - LVDT
 - Strain gauge
 - Diaphragm.
 - List any two applications of nuclear radiation method of level measurement.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Describe with neat sketch working of ultrasonic flowmeter.
 - b) Explain with neat labelled sketch working of RVDT.
 - c) State the following for Bourdon tube and Diaphragm –
 - i) Range of pressure measurement.
 - ii) Material used for construction.
 - d) Differentiate between RTD and Thermocouple with respect to –
 - i) Range of temperature measurement
 - ii) Cost
 - iii) Principle of working
 - iv) Materials used.
- 3. Attempt any THREE of the following:** **12**
- a) Explain with neat labelled sketch working principle of ‘C’ type Bourdon tube.
 - b) Describe with neat sketch working Rotameter flow measuring device.
 - c) Explain with neat labelled sketch working of capacitive type level measurement method.
 - d) Calculate the output resistance of RTD Pt 100 at temperature of 30°C and 100°C.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the working of vapour filled thermometer with neat sketch.
 - b) Differentiate between ventury and orifice plate flow measurement with respect to –
 - i) Range of flow measurement
 - ii) Materials used
 - iii) Working principle
 - iv) Cost
 - c) Describe with neat labelled sketch working of float type level measurement.

- d) Explain working of U tube manometer with neat sketch.
- e) State and describe selection criteria of transducer.

5. Attempt any TWO of the following: 12

- a) Explain with neat labelled sketch electrical pressure transducer diaphragm with strain gauge with reference to –
 - i) Working principle
 - ii) Merits
- b) Describe with the neat labelled sketch electromagnetic flowmeter with reference to –
 - i) Construction
 - ii) Working principle
 - iii) Merits.
- c) Describe the calibration procedure of temperature measuring instrument with neat sketch using RTD Pt 100 in the temperature range of 0–100°C.

6. Attempt any TWO of the following: 12

- a) Describe with neat labelled sketch Coriolis mass flowmeter with reference to –
 - i) Construction
 - ii) Working principle
 - iii) Merits
 - b) Differentiate between thermocouple and pyrometer temperature measuring device with respect to –
 - i) Construction
 - ii) Working principle
 - iii) Range of temperature measurement
 - iv) Cost.
 - c) Describe with neat diagram Radar type level measurement method. State its advantages and disadvantages.
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