

313340

24225

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**10**

- (a) State the need of transducers in Instrumentation system.
- (b) List any two uses of digital multimeter.
- (c) State seebeck and Peltier effect.
- (d) List any two specification of
  - (i) Thermistor
  - (ii) RTD
- (e) Define pressure. State its units. (any two)
- (f) List types of flow.
- (g) Give classification of level measurement (Direct method).

**2. Attempt any THREE of the following :**

**12**

- (a) Give two examples of
  - (i) Active Transducer



- (ii) Resistive Transducer
- (iii) Inductive Transducer
- (iv) Digital Transducer
- (b) Explain the selection criteria for transducers. (any four points)
- (c) Explain with diagram working of Bimetallic thermometer.
- (d) Compare ultrasonic type and radar type level measurement transducer. (any four points)

**3. Attempt any THREE of the following :**

**12**

- (a) State and explain different types of standards of measurements.
- (b) Describe with diagram optical pyrometer type temperature sensor.
- (c) Convert the following temperature from °F (Fahrenheit) to °C (Celsius)
  - (i) 10 °F
  - (ii) – 45 °F
  - (iii) 480 °F
  - (iv) 75 °F
- (d) Explain the working of electromagnetic flow meter with neat sketch.

**4. Attempt any THREE of the following :**

**12**

- (a) Explain the process of calibration of pressure gauge by Dead Weight Tester.
- (b) Define vacuum, atmospheric pressure, gauge pressure and absolute pressure.
- (c) Draw neat sketch of Rotameter and explain the use of it for the flow measurement.
- (d) Draw and explain Doppler type flow measurement.
- (e) Explain calibration process of capacitive type level measurement.

**5. Attempt any TWO of the following :****12**

- (a) Discuss the law of intermediate metals and law of intermediate temperature with respect to thermocouple.
- (b) Describe construction and working of Orifice plate meter with neat diagram.
- (c) Explain the working of following level detector with neat sketch :
  - (i) Float type with rotary potentiometer
  - (ii) Air purge level detector

**6. Attempt any TWO of the following :****12**

- (a) Draw neat diagram for the measurement of pressure using Bourdon tube with LVDT and explain it.
  - (b) Draw a neat labelled diagram of strain gauge load cell. Explain its construction and working.
  - (c)
    - (i) Explain with diagram working of Coriolis mass flow meter.
    - (ii) State its two applications.
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