

22420

24225

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

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|-----------|---|-----------|
| 1. | Attempt any <u>FIVE</u> of the following: | 10 |
| | <ol style="list-style-type: none">a) State any two examples of active transducer.b) List any two units of pressure.c) Give the advantages of electromagnetic flow meter.d) State the need of transducer.e) State the classification of level measurement methods.f) Define Laminar and turbulent flow.g) State meaning of PT-100. | |

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State any four selection criteria of transducers.
 - b) Explain the working of inclined tube manometer with neat sketch.
 - c) Explain the working of orifice plate meter with necessary diagram.
 - d) Differentiate the salient features of capacitor type level meter and nuclear radiation type level meter.
- 3. Attempt any THREE of the following:** **12**
- a) Draw and explain block diagram of the instrumentations system.
 - b) Write the advantages and limitations of optical pyrometer.
 - c) A capacitive type level sensor is to be used for measuring the level of water in the tank. With a neat labelled diagram. Explain the construction of this transducer. Also state the reason for change in capacitance with change in level of water.
 - d) List any two advantages and two applications of Bourdon tube.
- 4. Attempt any THREE of the following:** **12**
- a) Draw and explain the construction of Dead Weight Tester.
 - b) Related to electrical flow meter –
 - i) Give any two types of it.
 - ii) Write any two specifications.
 - c) State the applications of temperature measurement transducer -
 - i) Vapour pressure thermometer.
 - ii) Bimetallic pressure thermometer.
 - iii) RTD.
 - iv) Pyrometer.
 - d) Describe the salient features of the float type level measurement transducer.

- e) Name the material used and the sensitivity of the following thermocouple type –
- i) J
 - ii) K
 - iii) R
 - iv) S.

5. Attempt any TWO of the following: 12

- a) State the construction and working of LVDT with necessary sketch.
- b) State reason why Rotameter is called variable area flowmeter and explain the working of rotameter with neat diagram. State its one advantage and one disadvantage.
- c) Describe calibration procedure with a neat diagram of temperature measurement system with inputs from RTD and thermocouple.

6. Attempt any TWO of the following: 12

- a) Describe with neat sketches the procedure to troubleshoot diaphragm type pressure transducer.
 - b) Describe the following troubles and the related remedies in ultrasonic flow meter –
 - i) Meter does not show reading.
 - ii) Meter shows less value of flow measured.
 - iii) Meter shows high value of flow measured.
 - c) List any two indirect methods of level measurement. Explain Hook method of level measurement. Give one advantage and one disadvantage of it.
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