

22477

22232

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each Section on same / separate answer sheet.
 - (3) Answer each next main Question on a new page.
 - (4) Illustrate your answers with neat sketches wherever necessary.
 - (5) Figures to the right indicate full marks.
 - (6) Assume suitable data, if necessary.
 - (7) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (8) 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) What do you mean by proximity sensors ?
- (b) Give the classification of tachometer.
- (c) State the working principle of potentiometer.
- (d) List the elements of thermocouple.
- (e) Define thickness. State its unit.
- (f) Draw a neat labelled diagram of inductive pickup.
- (g) State the advantages of stroboscope.



2. Attempt any THREE of the following : 12

- (a) Explain the working of magnetic pickup for speed measurement.
- (b) Describe the working principle of RTD. Explain with neat sketch.
- (c) Explain construction and working of RVDT.
- (d) Describe working principle of C-type Bourdon tube. List materials used in it.

3. Attempt any THREE of the following : 12

- (a) Differentiate between inductive and capacitive proximity sensor.
- (b) Give the classification of transducers with examples.
- (c) Describe the working principle of Liquid in gas thermometer.
- (d) Explain with neat sketch working of differential roller type for thickness measurement.

4. Attempt any THREE of the following : 12

- (a) Suggest suitable method to measure thickness of newspaper with justification.
- (b) Compare between diaphragm and bellows.
- (c) Explain the seebeck and Peltier effect.
- (d) List the types of strain gauge. Define the term gauge factor.
- (e) Explain the working of bimetallic thermometer.

- 5. Attempt any TWO of the following :** **12**
- (a) State the working principle of photo-electric transducer. Give its applications.
 - (b) Convert 200 °F into Celsius (°C.), Kelvin (°K), and Rankine (°R).
 - (c) Compare U tube manometer and well type manometer (any four points). Give limitations of U-tube manometer.
- 6. Attempt any TWO of the following :** **12**
- (a) Classify different types of mechanical & electrical transducers with examples. Explain any one with neat sketch.
 - (b) Explain optical pyrometer with a neat diagram. State the temperature range where pyrometers are used & define thermopile.
 - (c) Describe the concept of colour sensor and magnetic reed switch.
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