

22333

12425

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) If possible, write the answers in sequential manner.

Marks

1. Attempt any FIVE of the following :

10

- (a) State the different types of errors in the instruments.
- (b) State the applications of bourdon tube.
- (c) Write the specifications of Analog multimeter.
- (d) Define the term standard w.r.t measurement.
- (e) Sketch the block diagram of vertical deflection system used in CRO.
- (f) List the applications of Data Acquisition System.
- (g) Define Transducer.

2. Attempt any THREE of the following :

12

- (a) Explain the role of Shunt Resistor connect across PMMC movement.
- (b) Define any two dynamic characteristics of measurement.
- (c) Define the working of Piezo-electric transducer.
- (d) Explain with sketches the working principle of Bourdon tube.



- 3. Attempt any THREE of the following :** **12**
- (a) Sketch and describe the working principle of RVDT.
 - (b) Define calibration and state its need.
 - (c) Describe the block diagram of function generator.
 - (d) Convert the PMMC movement into a dc-ammeter of the range 0 to 100 mA.
- 4. Attempt any THREE of the following :** **12**
- (a) Draw the block diagram of Instrumentation system and explain the significance of transducer in it.
 - (b) Compare Analog meter and Digital meter.
 - (c) Sketch AC signal conditioning circuit for level measurement.
 - (d) Sketch and explain Seebeck and Peltier effect.
 - (e) Explain Spectrum Analyzer with block diagram.
- 5. Attempt any TWO of the following :** **12**
- (a) Draw the labelled diagram of CRT. Explain each part in brief.
 - (b) (i) Explain working principle of Electromagnetic flow meter.
(ii) Explain procedure to measure humidity using Hygrometer.
 - (c) Describe the smallest measurable change in the voltage of an analog voltmeter having range 0 - 200 V with resolution of 0.15% of full scale.
- 6. Attempt any TWO of the following :** **12**
- (a) (i) Explain the working of LVDT with neat diagram.
(ii) Compare LVDT and RVDT.
 - (b) (i) Compare CRO and DSO.
(ii) State the formula for phase measurement using CRO with necessary diagram.
 - (c) Sketch the DC signal conditioning circuit for pressure measurement using strain gauge. Justify it.
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