

22333

22232

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.

Marks

1. Attempt any FIVE of the following :

10

- (a) Define :
 - (i) Threshold
 - (ii) Resolution
- (b) What is meant by Digital DAS ?
- (c) Give application of Spectrum analyser.
- (d) Give classification of transducers.
- (e) State the need of calibration.
- (f) Give application of function generator.
- (g) Write the application of DAS.

2. Attempt any THREE of the following :

12

- (a) Compare LED & LCD display.
- (b) What is dead zone ? What are the factors responsible for dead zone ?
- (c) Draw & explain working principle of rotameter.
- (d) Explain the role of shunt resistor connected across the PMMC movement.



- 3. Attempt any THREE of the following : 12**
- (a) Sketch labelled equivalent circuit diagram of practical ammeter and voltmeter.
 - (b) Describe the function of each block of DAS.
 - (c) State different types of pressure measurement transducers and explain any one.
 - (d) Draw circuit diagram of series type of ohmmeter and describe its working principle.
- 4. Attempt any THREE of the following : 12**
- (a) Design a Ayrton shunt type multiple range ammeter having 10 mA and 100 mA range. $R_m = 50 \Omega$, $I_m = 2 \text{ mA}$.
 - (b) Draw block diagram of instrumentation system and state the function of each block.
 - (c) Draw & explain the working principle of ultrasonic flow meter.
 - (d) Draw block diagram of function generator & explain its working.
 - (e) Define Error. Explain classification of errors.
- 5. Attempt any TWO of the following : 12**
- (a) Describe working principle of LVDT with diagram & give its application & advantageous.
 - (b) State the need of signal condition. Explain block diagram of AC signal conditioning system.
 - (c) Draw & explain Digital Storage Oscilloscope (DSO). Give features & application of it.
- 6. Attempt any TWO of the following : 12**
- (a) Explain the function of following sections in CRO :
 - (i) Vertical deflection system
 - (ii) Delay line
 - (iii) Horizontal deflection system
 - (b) (i) Calculate the resistance of Pt-100 for 50 °C.
(ii) Sketch the characteristics of Pt-100 and compare it with thermocouple.
 - (c) Define the term sensor. State selection criteria of sensor & classification of sensor. Explain any one type of sensor.
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