

22333

23124

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 answers 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 FIVE of the following : | 10 |
| (a) Define : (i) Accuracy (ii) Static error | 2 |
| (b) State the D'Arsonval movement principle of meter. | 2 |
| (c) State Lissajous pattern of CRO. | 2 |
| (d) Define : (i) Sensor (ii) Transducer | 2 |
| (e) Give the classification of sensor based on type of quantity. | 2 |
| (f) List the methods of level measurement. | 2 |
| (g) List the application of Data Acquisition System. | 2 |
| 2. Attempt any THREE of the following : | 12 |
| (a) Define calibration of instrument. Write need and procedure of calibration. | 4 |
| (b) Explain working principle of PMMC instrument with diagram. | 4 |
| (c) Compare analog CRO with Digital Storage Oscilloscope (DSO). (any 4 points) | 4 |
| (d) Draw the Bourdon tube pressure gauge and explain working principle of Bourdon tube. | 4 |



- 3. Attempt any THREE of the following : 12**
- (a) Compare analog and digital meters (any 4 points). 4
 - (b) Draw a block diagram of function generator. State function of each block. 4
 - (c) Draw and describe the constructional diagram of LVDT. 4
 - (d) Draw the functional block diagram of DC signal conditioning unit. 4
- 4. Attempt any THREE of the following : 12**
- (a) Draw and explain moving Iron Attraction type instrument. 4
 - (b) An ammeter of 1 mA having resistance of 100 Ω is to be converted to get 0 – 100 mA. Find shunt resistance required. 4
 - (c) Explain operation of dual trace CRO, with neat block diagram. 4
 - (d) Explain working principle of electromagnetic flow meter and ultrasonic flow meter. 4
 - (e) Draw block diagram of Data Acquisition system. 4
- 5. Attempt any TWO of the following : 12**
- (a) Explain types of errors occurs in instrument. 6
 - (b) With suitable diagram explain construction and working of optical pyrometer. 6
 - (c) Draw and explain functional block diagram of AC signal conditioning unit. 6
- 6. Attempt any TWO of the following : 12**
- (a) Explain amplitude and frequency measurement using CRO with suitable diagram. 6
 - (b) (i) Draw and explain piezoelectric transducer.
(ii) State selection criteria of transducer. 6
 - (c) State working principle with suitable block diagram : 6
 - (i) Venturimeter
 - (ii) Rotameter
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