22333

11819

3 Hours / 70 Marks Seat No. | | | | | | | | |

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

1. Attempt any FIVE of the following : **10**

(a) Define :
  (i) Absolute Instrument
  (ii) Secondary Instrument
(b) State the meaning of PT-100.
(c) List applications of ohmmeter.
(d) State different types of errors in Instruments.
(e) State need of delay line in CRO.
(f) Differentiate AC and DC signal conditioning.
(g) State selection criteria of transducer.

2. Attempt any THREE of the following : **12**

(a) Explain working principle of PMMC instrument with diagram.
(b) State and explain different types of standards.
(c) Describe the working principle of Piezo-Electric Transducer.
(d) Compare Bourdon tube with Bellows.

3. Attempt any THREE of the following : **12**

(a) Define calibration and state its need.

(b) Draw labelled diagram of CRT.

(c) Identify Active and Passive transducers from : RTD, Piezoelectric transducer, Strain gauge, LVDT.

(d) Voltmeter never connected in series with source of emf. Justify it.

4. Attempt any THREE of the following : **12**

(a) Describe function of each block of Instrumentation system.

(b) Compare Analog and digital meters on :

(i) Principle

(ii) Accuracy

(iii) Resolution

(iv) Example

(c) Explain block diagram of AC signal conditioning.

(d) State and explain seeback and Peltier effects.

(e) Explain spectrum analyzer with block diagram.

5. Attempt any TWO of the following : **12**

(a) Explain with sketch procedure to measure frequency and Amplitude using CRO.

(b) (i) Explain working principle of Electromagnetic flow meter. **(3)**

(ii) Explain procedure to measure humidity using hygrometer. **(3)**

(c) Design a D'Arsonval moment with internal resistance of 60 Ω and full scale deflection current 3 mA into a multiranging dc voltage with voltage range of 0 – 20 V, 0 – 40 V, 0 – 100 V.

6. Attempt any TWO of the following : **12**

(a) (i) Explain the working of LVDT with neat diagram.

(ii) Compare LVDT with RVDT.

(b) Draw the block diagram of DSO and explain function of each block.

(c) (i) State need of signal conditioning. **(2)**

(ii) Explain with sketch function of each block of Data Acquisition System (DAS). **(4)**
