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11718

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. (A) Attempt any SIX :

12

- (a) Give classification of transducer.
- (b) Define passive transducer. Give two example.
- (c) State the principle of piezoelectric transducer.
- (d) Draw two wire system of RTD.
- (e) State the need of signal generator.
- (f) State two applications of DSO.
- (g) State the need of delay line in CRO.
- (h) Describe absolute instrument with any one example of it.

(B) Attempt any TWO :

8

- (a) Explain the concept of primary and secondary transducer with suitable example.
- (b) Differentiate accuracy and precision with suitable example.
- (c) Explain working of analog ammeter.

**2. Attempt any FOUR :****16**

- (a) Draw neat block diagram of dual trace CRO. Explain its working.
- (b) Describe working of electromagnetic flowmeter with the help of diagram.
- (c) Explain how temperature measurement is done using RTD.
- (d) Draw the diagram of PMMC. State its working principle.
- (e) Draw the block diagram of video pattern generator.
- (f) Draw the block diagram of LCR Q meter and explain its working.

**3. Attempt any FOUR :****16**

- (a) Explain the working full wave rectifier type AC voltmeter.
- (b) Draw a neat labelled diagram of square-wave generator and explain its working.
- (c) State any four specification of digital frequency meter.
- (d) Explain phase and frequency measurement using lissajous figure.
- (e) Explain working of thermocouple with suitable diagram.
- (f) Explain the working of CRO.

**4. Attempt any FOUR :****16**

- (a) Explain AF signal generator.
- (b) Define waveform analyser. State the need of waveform analyser.
- (c) Explain the difference between analog CRO and digital storage oscilloscope.

- (d) Describe working of pulse generator with the help of diagram.
- (e) "LVDT is used to measure displacement." Justify the statement.
- (f) Draw the block diagram of instrumentation system. Explain the role of each block.

**5. Attempt any FOUR :****16**

- (a) Explain how flow is measured using time difference type of ultrasonic flow-meter.
- (b) Draw block diagram of harmonic distortion analyser. State its applications.
- (c) Draw block diagram of spectrum analyser. Explain its working.
- (d) Compare RTD & thermistor. (any four)
- (e) State the material used & temperature range for following thermocouple :  
T, K, S, R.
- (f) Explain the concept of analog & digital transducer with suitable example.

**6. Attempt any FOUR :****16**

- (a) State any four advantages of digital instruments.
  - (b) Draw the block diagram of DMM and explain its working.
  - (c) State the role of any four front panel controls of CRO.
  - (d) Determine the true value of input voltage if the measured value is 10.6V and error is +10%.
  - (e) Explain construction and working of multirange voltmeter.
  - (f) List and explain the types of error.
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