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21314

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any **SIX** of the following: 12
- i) Write any four advantages of Electrical Transducer.
- ii) Give two examples of Absolute instruments and Secondary instruments.
- iii) State any four specifications of CRO.
- iv) State PT-100? Give the significance of PT and 100.
- v) Define Lissajous pattern. State it's applications.
- vi) State with neat sketch operation of basic signal generator.
- vii) List any two piezoelectric materials.
- viii) Draw the block diagram of instrumentation system.

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Marks**b) Attempt any TWO of the following:****8**

- i) Draw the input output characteristics of L.V.D.T. Why it is called as differential transducer?
- ii) The value of resistor is 5.6 K-ohms while measurement reads a value of 5.54 K-ohms.
Calculate:
 - 1) Relative accuracy
 - 2) % accuracy
- iii) Draw the circuit diagram of rectifier type A.C. voltmeter. State it's principle.

2. Attempt any FOUR of the following:**16**

- a) Draw the block diagram of digital storage oscilloscope.
- b) Give two advantage and two disadvantages of Electromagnetic flow meter.
- c) Give construction, working principle of RTD with neat diagram.
- d) A 1mA meter movement with an internal resistance of 100Ω is to be converted into a 0-100mA ammeter. Calculate the value of shunt resistance required.
- e) Draw the block diagram of pulse generator.
- f) Draw the block diagram of LCR-Q meter. Explain it.

3. Attempt any FOUR of the following:**16**

- a) Draw a neat labelled diagram of PMMC instruments and state it's working principle.
- b) Draw the block diagram of RF signal generator. Explain it's working.
- c) Draw the block diagram of digital voltmeter. Give any four applications of digital voltmeter.

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Marks

- d) Draw the block diagram of single beam dual trace CRO and state its concept.
- e) Give the classification of temperature measuring transducers and define temperature.
- f) Draw the block diagram of dual beam dual trace CRO and list any two applications.

4. Attempt any FOUR of the following: 16

- a) Describe working with neat sketch of video pattern generator.
- b) Give comparison between wave analyzer and harmonic distortion analyzer.
- c) Give the procedure to measure frequency and voltage using CRO in normal mode.
- d) List any eight specifications of function generator.
- e) Compare active and passive transducer (minimum four points)
- f) With neat diagram explain working principle of capacitive transducer.

5. Attempt any FOUR of the following: 16

- a) Compare time difference ultrasonic flow meter and Doppler type ultrasonic flow meter. (Minimum four points)
- b) Describe working with labelled sketch of logic Analyzer.
- c) List characteristics of pulse of generator.
- d) Draw three wire system circuit of RTD.
- e) State the materials used to construct negative temperature coefficient thermistor and positive temperature coefficient thermistors.
- f) Compare active and passive transducer.

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Marks**6. Attempt any FOUR of the following:****16**

- a) Compare analog instrument with digital instruments.
 - b) Draw the block diagram of digital frequency meter. Explain function of each block.
 - c) List any eight specifications of DSO.
 - d) Define the following terms:
 - i) Accuracy
 - ii) Sensitivity
 - iii) Resolution
 - iv) Linearity
 - e) Give requirements of shunt in multirange ammeter.
 - f) A 0–150V voltmeter has a guaranteed accuracy of 1 percent full scale reading. The voltage measured by this instrument is 83V. Calculate the limiting error in percent.
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