17435

15162

3 Hours / 100 Marks Seat No. | | | | | | | | |

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) Define transducer

(ii) Differentiate between sensitivity and resolution (Any two points)

(iii) State four applications of CRO.

(iv) Define flow.

(v) State the functions of delay line in CRO.

(vi) State the need of function generator.

(vii) State the types of Inductive transducer and mention its uses.

(viii) List the transducer selection criteria.

Marks

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

(i) Explain working principle of resistive transducer? State its applications.

(ii) A 0 - 150 V voltmeter has a guaranteed accuracy of 1% of full scale reading. The voltage measured by the instrument is 75 V Calculate the limiting error in percent. Comment on result.

(iii) Explain working of analog AC Ammeter with suitable diagram.

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

a) Draw the basic block diagram of CRO and explain working of any two blocks.

b) Write the working principle of RTD, how temperature changes is measured using RTD.

c) Explain how temperature is measured using thermocouple.

d) A moving coil instrument gives a full scale deflection of 10 mA when the potential difference across its terminal is 100 mV. Calculate

(i) Shunt resistance for full scale deflection corresponding to 100 A

(ii) The series resistance for full scale reading with 1000 V. Calculate power dissipation in each case.

e) Explain with block diagram working of AF signal generator.

f) With neat schematic diagram illustrate the working principle of digital frequency metal.

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

a) Explain Analog AC voltmeter half wave rectifier type.

b) Draw the neat block diagram of harmonic distortion analyzer and state function of each block.

c) State advantages and disadvantages of digital Instruments (four each).

Marks

d) Give the method for frequency measurement using Lissagous pattern.

e) Draw a neat diagram of 4 - wire RTD system.

f) Explain with neat diagram dual beam dual trace CRO

4. Attempt any FOUR of the following: 16

a) Explain with suitable diagram, working of video pattern generator.

b) Explain with suitable diagram how spectrum analyzer is used for observation of frequency spectrum of a signal.

c) Draw block diagram of Digital Storage Oscilloscope (DSO). List its advantages (Any two).

d) Illustrate with suitable diagram working of pulse generator.

e) Differentiate between primary and secondary transducers. (Any four points)

f) Explain working of LVDT with suitable diagram.

5. Attempt any FOUR of the following: 16

a) Explain how time difference type ultrasonic flow meter is used for flow measurement.

b) Explain with block diagram working of logic analyzer.

c) Explain working of RF-type signal generator.

d) Illustrate with diagram working of doppler type ultrasonic flow meter.

e) Explain the working of electromagnetic flow meter.

f) Illustrate the working of RVDT with the help of diagram.

Marks

6. Attempt any FOUR of the following: 16

a) Differentiate between digital instrument and analog instrument.

b) Draw DMM block diagram and state functions of any three blocks.

c) Explain with neat diagram single beam dual trace CRO.

d) Define following:

(i) Speed of response

(ii) Lag

(iii) Fidility

(iv) Dynamic error

e) Explain with suitable diagram principle of working of PMMC instruments.

f) The expected value of voltage across the resistor is 50 volt. However measurement gives a value of 49 volt. Calculate relative accuracy and % accuracy.

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