17435

21314

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 <u>SIX</u> 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.

Marks

b) **Attempt any <u>TWO</u> 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 <u>FOUR</u> 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 <u>FOUR</u> 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.

Marks

d) Draw the block diagram of single beam dual trace CRO and state it's 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 <u>FOUR</u> of the following: **16**

a) Describe working with neat sketch of video pattern generator.

b) Give comparision 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 capactive transducer.

5. Attempt any <u>FOUR</u> 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.

Marks

6. Attempt any <u>FOUR</u> 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.