313334

12526

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 answer 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)   State the importance of measurement.

b)   State the meaning of four quadrants in meters.

c)   Enlist any two differences in digital and analog instruments.

d)   Identify the advantages of non contact type tachometer.

e)   Define transducer with one example.

f)   Classify the flow transducers.

g)   State the methods used for level measurement.

Marks

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

a) Elaborate the procedure of providing controlling torque in measuring instruments.

b) Draw a block diagram of smart energy meter.

c) Identify the instrument used for synchronization and explain the working in brief.

d) Compare between LVDT and RVDT.

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

a) Explain in brief dynamic characteristics of measuring instruments.

b) Elaborate the working of single phase induction type energy meter.

c) A current of 6 Amp flows for 20 min through a 220 V energy meter. If during test the initial and final readings on meter 3.53 and 4.00 Kwh respectively. Calculate the meter error as a percentage of meter reading.

d) Explain in brief level measurement with capacitive transducer.

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

a) Suggest compensation method for any two errors in measuring instruments.

b) Draw a block diagram of three phase digital energy meter.

c) Phase voltage and phase current of a star connected inductive load is 150 volts and 25 Amp respectively. Power factor of load is 0.707 (lag). Assuming 3 wire system and power is measured by two wattmeters, find the readings of wattmeters.

d) Describe the working of digital earth tester in brief.

e) Describe the operation of piezoelectric transducer in brief.

Marks

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

a) With neat labelled sketch explain the function of each block of CRO.

b) Describe the working of bourdon tube with LVDT as secondary transducer with neat sketch.

c) Elaborate the working of electromagnetic flow meter. State its applications also.

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

a) With neat diagram, explain the working of LCR meter in detail.

b) Elaborate any two differences between sensors and transducers with examples.

c) Explain with neat sketch, measurement of temperature with thermocouple.

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