

313334

24225

3 Hours / 70 Marks

Seat No. 

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- 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 significance of measurement.
  - b) A single phase wattmeter rated for 600V, 5A is having full scale deflection of 750 watt. Calculate multiplying factor of the wattmeter.
  - c) List the applications of clamp-on meter.
  - d) Define precision and accuracy.
  - e) Define transducer. Give its two example.
  - f) Give the classification of level measurement methods.
  - g) Predict the applications of Thermister and RTD.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Compare absolute and secondary instruments.
  - b) Draw labelled diagram of induction type single phase energy meter.
  - c) Draw a block diagram of CRO and state function of each block.
  - d) Name the material used and the sensitivity of following thermocouple type –
    - i) J
    - ii) K
    - iii) R
    - iii) S.
- 3. Attempt any THREE of the following:** **12**
- a) Explain with neat sketch working of moving iron instruments.
  - b) With the neat sketch explain working of dynamometer type wattmeter.
  - c) Compare one wattmeter and two wattmeter method for power measurement with reference to –
    - i) No. of Wattmeter
    - ii) Total active power
    - iii) Economy
    - iv) Connection.
  - d) Compare ultrasonic type and radar type level measurement transducer.
- 4. Attempt any THREE of the following:** **12**
- a) State the use of shunt and series resistance used in extension of voltmeter.
  - b) Draw the block diagram of smart energy meter and describe it's working.
  - c) Draw the circuit diagram and phasor diagram for measurement of reactive power in Three phase balanced star connected load by one wattmeter method.

- d) Write any four points of difference between analog and digital instruments.
- e) Describe criteria for the selection of transducer for following applications –
  - i) Weighting machine in grocery shop
  - ii) Water level controller for home.

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

- a) Describe the procedure for the measurement of earth resistance by using earth tester.
- b) Draw constructional diagram of LVDT. State its working principle for displacement measurement.
- c) Draw neat sketch of Rota meter and explain its working principle.

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

- a) Draw a labelled block diagram of sine wave generator and write function of each block.
  - b) Write any three applications of each. Capacitive and Inductive transducer.
  - c) Suggest the temperature transducer with reason for the following applications –
    - i) Temperature of the winding of electrical machines.
    - ii) Temperature of refrigerator and air conditioner.
    - iii) Temperature of furnace and oven.
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