23242

2 Hours / 70 Marks   Seat No.

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each section on separate answer sheet.

(3) Answer each next main Question on a new page.

(4) Illustrate your answers with neat sketches wherever necessary.

(5) Figures to the right indicate full marks.

(6) Assume suitable data, if necessary.

(7) Use of Non-programmable Electronic Pocket Calculator is permissible.

(8) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

SECTION - I

1. **Attempt any FIVE of the following:**   **10**

a) Define power and write its unit.

b) List different types of single phase transformers.

c) List two applications of servomotor.

d) Define energy and write its unit.

e) State two uses of digital meters.

f) State the principle on which transformer works.

g) State methods of energy saving in textile industry.

Marks

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

a) State and explain flemings right hand rule with diagram.

b) Explain the working of LED with construction and state its uses.

c) Explain the principle of working of a single-phase induction motor with a neat diagram.

d) A single phase, 50 Hz transformer has 80 turns on the primary winding and 400 turns on the secondary winding. The net cross-sectional area of the core is 200 cm^2. If the primary winding is connected to a 240 V, 50 Hz supply, determine

i) The e.m.f. induced in the secondary winding and

ii) The maximum value of the flux density in the core.

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

a) A coil having 10 Ω resistance and 0.1 H inductance is connected across a 230 V, 50 Hz AC supply. Calculate

i) Current

ii) Power Factor

b) A, 2000 / 200 V, single phase, 50 Hz transformer has the maximum core flux of 20 mWb. Find out the number of turns on the primary and secondary windings.

c) State the types of single phase induction motors. Explain the working of anyone with neat diagram.

d) Differentiate between analog and digital meters.

Marks

SECTION - II

4. **Attempt any <u>SIX</u> of the following:**   12

    a) Write color code for 1 KΩ resistor and 5 KΩ resistor (+ 10% tolerance)

    b) State the need of rectifier.

    c) Write the measuring unit for

      i) capacitor and

      ii) inductor

    d) Define active and passive components.

    e) State the used of LDR and draw its symbol.

    f) Draw NPN and PNP transistor symbol with neat label.

    g) List any two types of displacement sensors.

5. **Attempt any <u>THREE</u> of the following:**   12

    a) Compare between LDR and LED. (Four point)

    b) Explain any one pressure transducer used in textile with neat sketch.

    c) Draw and explain VI characteristics of PN junction diode under forward bias condition.

    d) Write the color codes for the following resistors :

      i) 500 K, + - 5%

      ii) 23.4 K, + - 10%

    e) Explain the construction and working of LVDT.

6. **Attempt any <u>TWO</u> of the following:**   12

    a) Explain full wave rectifier with circuit diagram and waveform.

    b) Setup bourdon tube for pressure measurement in textile processing with neat sketch.

    c) Explain the working of yarn evenness tester with suitable block diagram.

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