22310

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

(2) Answer each section on separate answer book.

(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

SECTION - I

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

a) Define permeability and reluctance.

b) Draw power triangle for AC circuit.

c) Define RMS value and average value.

d) State the relation between time period and frequency. Calculate time period for 60Hz frequency.

e) List the application of single phase induction motor (any four)

f) List the different types of transformer.

g) List two applications of auto transformer.

Marks

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

   a) Compare electric circuit and magnetic circuit on any four
       points.

   b) Derive emf equation of single phase transformer.

   c) An alternating current is represented by $i = 50.5 \sin\left(314t + \frac{\pi}{2}\right)$
       Calculate

       i)   Amplitude of current

       ii)   Frequency

       iii) Phase difference

       iv)   RMS value of current

   d) State four major parts of transformer and give material used
       for each.

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

   a) Related to electormagnetic induction

       i)   Define Faraday's both laws.

       ii)   Define self and mutually induced emf

       iii) State equations of self and mutual inductance.

   b) List any four types of single phase AC motor. Draw neat
       circuit of any one type. Explain its working.

   c) Draw RL series circuit. Draw waveform and phasor diagram
       for the same. Write equation of current, voltage and power
       for this circuit.

Marks

SECTION - II

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

a) Compare active and passive components (two points)

b) Draw symbols of zener diode and LED.

c) List types of BJI and draw their symbols.

d) List specifications of resistors

e) Define rectifier. List different types of rectifiers.

f) State the applications of BJT.

g) State any four applications of LED.

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

a) Find the value of resistor from the given colour code.

   i)   Orange, Orange, Orange, Silver

   ii)   Green, Blue, Yellow, Silver

b) Draw and explain working principle of half wave rectifiers and draw its waveforms.

c) Draw constructional diagram of LED and explain its working principle.

d) Explain ideal and practical voltage source with suitable diagram.

e) Compare CB, CC and CE configuration of transistor. (four points)

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

  a) i)   Differentiate between analog and digital ICS

      ii)   List different types of resistors and capacitors.

  b) i)   Define filter and state it's type.

      ii)   Draw and explain 'C' filter with suitable diagram.

  c) i)   Define the following parameter of transistor

          1) α

          2) β

          3) Input resistance

      ii)   Describe the working of transistor as a switch.

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