23124

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 answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Answer each section on separate answer Book.

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

Marks

SECTION - I

1.   **Attempt any SIX of the following:**   **12**

a) Define

i)   MMF

ii)   Permiability

b) Define the term cycle and frequency.

c) Draw sinusoidal waveform and show the various quantities associated with it.

d) Draw the power triangle. State its significance.

e) State two applications of shaded pole motor.

f) Define FHP motor.

g) Define transformation ratio of transformer.

Marks

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

   a) Compare magnetic and electric circuit. (four points)

   b) Draw a balanced 3 phase star connected load. Show various line and phase quantities on it. Also write relationship between line and phase values of voltage and current.

   c) Derive the emf equation of single phase transformer.

   d) Explain the working of autotransformer. State its any two applications.

   e) Explain construction of single phase motor with working principle.

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

   a) Explain self induced emf and mutually induced emf.

   b) Explain the working of single phase transformer.

   c) A capacitor of $30\mu F$ is connected in series with resistor of 120Ω. The circuit supplied with AC supply of 230v, 50HZ. Determine :

     i)   Capacitive reactance

     ii)   Impedance

     iii)   Current

     iv)   Circuit power

     v)   Power factor

   Draw circuit diagram.

SECTION - II

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

   a) Draw the symbol of resistor and capacitor. State its units.

   b) List different types of electronic components with examples.

   c) State the need of filter circuit in rectifier circuit. State its types.

   d) Define PIV and ripple factor.

   e) Draw the symbol of PNP and NPN transistor.

   f) Draw the diagram showing the operating regions of transistor.

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

   a) Compare Analog and Digital IC's.

   b) Find the values of resistor from the given colour code

      i) Orange, Red, Brown, silver

      ii) Green, Orange, orange, silver

   c) Explain the working of PN junction diode with suitable diagram.

   d) Explain the construction of LED with suitable diagram.

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

   a) Explain ideal and practical current source with suitable diagram.

   b) Explain the full wave bridge rectifier with π filter. Draw its circuit diagram and wave form.

   c) Explain the working of transistor as an amplifier, with suitable diagram.

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