

22310

12223

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each Section on separate answer sheet.
(3) Illustrate your answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) 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

- State Lenz's law.
- Define MMF.
- Define frequency and time period of an alternating quantity.
- Define form factor and cycle of an alternating quantity.
- Write any four applications of single phase motors.
- State the working principle of transformer.
- Classify single phase motors.

P.T.O.

2. Attempt any THREE of the following: 12

- a) Explain with neat diagram statically and dynamically induced emf.
- b) For RL series circuit draw :-
 - i) Circuit diagram
 - ii) Waveform
 - iii) Phasor diagram
 - iv) Impedance diagram
- c) Explain the working of single phase capacitor start capacitor run motor with neat diagram.
- d) Compare single phase transformer and auto transformer on any four points.

3. Attempt any TWO of the following: 12

- a) Draw and explain B-H curve.
- b) A resistance of 200Ω and a capacitor of $20\ \mu\text{F}$ are connected in series across a 1ϕ , 230V, 50Hz ac supply.

Determine :-

- i) impedance
 - ii) capacitive reactance
 - iii) current
 - iv) power loss and
- Draw phasor diagram and waveform.
- c) Derive an emf equation of single phase transformer.

SECTION-II

- 4. Attempt any FIVE of the following: 10**
- a) Draw symbol of ideal voltage source and practical voltage source.
 - b) Define PIV and ripple factor.
 - c) Define α and β of a transistor.
 - d) Define active component with two examples.
 - e) Define filter and state its types.
 - f) State the four applications of BJT.
- 5. Attempt any THREE of the following: 12**
- a) Define amplitude and phase of a sinusoidal quantity.
 - b) Explain the working of zener diode as voltage regulator.
 - c) Explain the working of full wave bridge rectifier with neat diagram.
 - d) Explain with neat diagram construction of BJT.
- 6. Attempt any TWO of the following: 12**
- a) Differentiate between analog and digital ICs.
 - b) Explain the construction and working of LED and state its any two applications.
 - c) Explain with neat diagram how transistor can be used as –
 - i) a switch
 - ii) an amplifier.
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