

22208

11920

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 answers 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.

SECTION – I

Marks

1. Attempt any SIX of the following :

12

- (a) Define magnetic flux density with its unit.
- (b) State the relation between magnetic field strength, flux density and permeability.
- (c) Define frequency and time period with respect to sinusoidal quantity.
- (d) Draw waveform showing leading and lagging alternating quantity.
- (e) Classify the transformers based on voltage level and supply system.
- (f) State any two applications of auto transformer.
- (g) State the types of single phase induction motors.
- (h) Define auto transformer.

- 2. Attempt any THREE of the following:** **12**
- (a) Compare statically and dynamically induced emf.
 - (b) State any four advantages of three phase system over single phase system.
 - (c) Draw the constructional diagram of a transformer and state its working principle.
 - (d) Explain with neat diagram the working of permanent capacitor start induction motor.
- 3. Attempt any TWO of the following :** **12**
- (a) State the following :
 - (i) Faraday's laws of electromagnetic induction
 - (ii) Lenz's law
 - (iii) Fleming's right hand rule
 - (b) A resistance of 10Ω and an inductance of 0.2 H are connected in series across 230V , 50Hz AC supply. Determine :
 - (i) Impedance
 - (ii) Current
 - (iii) Power factor
 - (iv) Power
 - (v) V_R
 - (vi) V_L
 - (c) Compare two winding transformer with auto transformer based on :
 - (i) Size
 - (ii) Cost
 - (iii) Efficiency
 - (iv) Application
 - (v) Copper loss
 - (vi) No. of windings

SECTION – II

- 4. Attempt any FIVE of the following : 10**
- (a) List different types of passive components & active components.
 - (b) Draw symbol for diode and zener diode.
 - (c) Why is collector wider than emitter and base ?
 - (d) Define ideal current source and practical voltage source.
 - (e) List PIV importance in rectifier services.
 - (f) List the three possible transistor connections.
 - (g) Define integrated circuit.
- 5. Attempt any THREE of the following : 12**
- (a) Find the value of resistor from the following colour code :
 - (i) Orange, Green, Red, Silver
 - (ii) Red, Orange, Black, Silver
 - (b) Explain the action of the shunt capacitor filter.
 - (c) Explain how a zener diode can be used as a voltage regulator.
 - (d) Compare analog and digital ICs.
- 6. Attempt any TWO of the following : 12**
- (a) Draw sinusoidal, triangular and square waveform and define amplitude, frequency and wavelength.
 - (b) Explain the operation of a full wave rectifier with neat circuit diagram and draw input, output waveforms.
 - (c) Describe input and output characteristics of CE connection experimentally.
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