

22232

23124

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.

Marks

SECTION – I

1. Attempt any SIX of the following :

12

- (a) Define term – inductive reactance, capacitive reactance.
- (b) State Faraday’s first law of electromagnetic induction.
- (c) State different types of power in AC circuit.
- (d) State relationship between line and phase values for 3 phase star connected load.
- (e) State emf equation for single phase transformer and factors affecting on it.
- (f) State different types of FHP motor.
- (g) State the working principle of single phase AC motor.



2. Attempt any THREE of the following : 12

- (a) Explain term :
 - (i) Self induced emf
 - (ii) Mutually induced emf
- (b) Draw circuit diagram of ac circuit containing R & C. State voltage, current & impedance equation for it.
- (c) State difference between two winding transformer and autotransformer.
- (d) Draw & explain working of autotransformer.

3. Attempt any TWO of the following : 12

- (a) Draw B-H curve and state difference between electric and magnetic circuits (four points).
- (b) An ac signal, $V = 14 \sin 314 t$ is applied to load, calculate –
 - (i) Maximum value
 - (ii) RMS value
 - (iii) Frequency
 - (iv) Time period
 - (v) Form factor
 - (vi) Peak factor
- (c) A single phase, 230 V/115 V, 1 kVA supply applied to single phase transformer
Calculate :
 - (i) Full load primary & secondary current
 - (ii) Transformation ratio
 - (iii) Turn ratio
 - (iv) Current ratio
 - (v) emf ratio

SECTION – II

- 4. Attempt any FIVE of the following : 10**
- (a) State the four specifications of resistor.
 - (b) List the dielectric materials used in capacitor.
 - (c) State the needs of filter in electronic circuits.
 - (d) Draw the symbol of –
 - (i) LED
 - (ii) Zener diode
 - (e) Define term –
 - (i) α
 - (ii) β
 - (f) Draw the symbol –
 - (i) NPN BJT
 - (ii) PNP BJT
- 5. Attempt any THREE of the following : 12**
- (a) Find the value of resistors from given colour codes
 - (i) Brown, Black, Red, Gold
 - (ii) Yellow, Violet, Red, Silver
 - (b) State the difference between half wave rectifier and center tap full wave rectifier on the basis of
 - (i) No. of diode used
 - (ii) Ripple factor
 - (iii) PIV rating
 - (iv) Rectification efficiency
 - (c) Draw and explain transistor as a switch.
 - (d) State difference between active and passive components (four points).

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

- (a) Draw and explain VI characteristics of P-N junction diode. State any two specification of it.
 - (b) Explain following signals with neat sketches.
 - (i) Sinusoidal
 - (ii) Traingular
 - (iii) Square
 - (c) Draw and explain CE configuration for bipolar junction transistor. Also show the different regions in output characteristics of CE configuration.
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