

22232

24225

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) Answer each next main Question on a new page.
 - (4) Illustrate your answers with neat sketches wherever necessary.
 - (5) Figures to the right indicate full marks.
 - (6) Assume suitable data, if necessary.

Marks

SECTION – I

1. Attempt any SIX of the following :

12

- (a) Draw power triangle for RC series circuit.
- (b) Define hysteresis loop and magnetic force.
- (c) Write the equation of voltage and current in pure capacitive circuit.
- (d) State Faraday's laws of electromagnetic induction.
- (e) Define FHP motor.
- (f) Write working principle of transformer.
- (g) Give the significance of emf equation of transformer.



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

- (a) Explain
 - (i) Dynamically induced emf
 - (ii) Statically induced emf
- (b) With a neat sketch, explain working of single phase induction motor.
- (c) State voltage and current relationship in star and delta connections.
- (d) Derive an emf equation of single phase transformer.

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

- (a) A resistance of $10\ \Omega$, inductance of 0.1H and capacitance of $100\ \mu\text{f}$ are connected in series across 100 volts, 50 Hz, AC supply.

Find :

- (i) Impedance
- (ii) Current
- (iii) Power factor
- (iv) Power
- (b) List starting methods for induction motors. Explain any one of them with a suitable diagram.
- (c) Derive the equations of self and mutual inductance.

SECTION – II**4. Attempt any FIVE of the following :****10**

- (a) Define rectifier and rectification efficiency.
- (b) List different types of electronic components. (any four)
- (c) Establish the relationship between α and β for a transistor.
- (d) Name any four specification of resistor.
- (e) State the application of PN junction diode.
- (f) Draw diagram showing the operating region of transistor.

5. Attempt any THREE of the following : 12

- (a) Differentiate between analog and digital ICs.
- (b) Draw full wave center-tap rectifier with π filter and draw its input and output waveform.
- (c) Explain the function of transistor as switch.
- (d) Find the value of capacitor from given colour code :
 - (i) Orange, Orange, Blue, Gold
 - (ii) Red, Orange, Grey, Gold

6. Attempt any TWO of the following : 12

- (a)
 - (i) Explain ideal and practical current source with suitable diagram.
 - (ii) List any two types of signals used in electronic circuits. Draw their waveforms.
 - (b)
 - (i) Explain the construction of LED.
 - (ii) List any three applications of LED.
 - (c) Explain the Common Emitter (CE) configuration of bipolar junction transistor with input and output characteristics.
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