

22208

22232

3 Hours / 70 Marks

Seat No.

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

**Marks**

**SECTION – I**

- 1. Attempt any SIX of the following :** **12**
- (a) Define Power and Energy.
  - (b) Draw power triangle of RC series circuit.
  - (c) State the difference between step up and step down transformer.
  - (d) Define (i) MMF (ii) Leakage factor.
  - (e) Write the equation of V & I in pure capacitive circuit.
  - (f) Give the classification of single phase induction motor.
  - (g) Define FHP motor.
- 2. Attempt any THREE of the following :** **12**
- (a) Derive an emf equation of single phase transformer.
  - (b) Explain :
    - (i) Dynamically induced emf
    - (ii) Statically induced emf



- (c) Draw and explain series RL circuit.
- (d) With a neat sketch, explain working of single phase induction motor.

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

**12**

- (a) Draw and explain B-H curve.
- (b) A resistance of  $10\ \Omega$ , inductance of  $0.1\ \text{H}$  and capacitance of  $100\ \mu\text{F}$  are connected in series across 100 volts, 50 Hz, AC supply find
  - (i) Capacitive reactance
  - (ii) Impedance
  - (iii) Current
  - (iv) Power factor
  - (v) Power
  - (vi) Draw phasor diagram
- (c)
  - (i) Explain working principle of transformer.
  - (ii) Write application of autotransformer.

**SECTION – II**

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

**10**

- (a) Define rectifier and rectification efficiency.
- (b) Name any four specification of resistor.
- (c) Establish the relationship between  $\alpha$  &  $\beta$  for a transistor.
- (d) List different types of electronic component with example.
- (e) State the application of PN junction diode.
- (f) Draw the diagram showing the operating regions of transistor.

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

- (a) Draw full wave center-tap rectifier with  $\pi$  filter and draw its input and output waveform.
- (b) Differentiate between analog and digital ICs.
- (c) Explain with a neat sketch zener diode as voltage regulator.
- (d) Find the value of capacitor from given colour code :
  - (i) Orange, Orange, Blue, Green.
  - (ii) Red, Orange, Grey, Gold.

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

- (a) Explain the following signals with neat sketches :
    - (i) Sinusoidal
    - (ii) Triangular
    - (iii) Square
  - (b) Explain the Common Emitter (CE) configuration of Bipolar junction transistor with input and output characteristics.
  - (c) Explain construction diagram and working principle of Light Emitting Diode (LED).
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