

# 22310

**23242**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Figures to the right indicate full marks.
  - (4) Answer each Section on separate answer sheet.
  - (5) Assume suitable data, if necessary.
  - (6) Illustrate your answers with neat sketches wherever necessary.
  - (7) 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**
- a) Define MMF and Reluctance.
  - b) Define average value and RMS value.
  - c) Write voltage and current relationship in star and delta connected circuits.
  - d) Define form factor and peak factor.
  - e) List applications of single phase induction motor. (any two)
  - f) Draw symbol for autotransformer and two winding transformer.
  - g) List the types of single phase induction motor.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State the laws of electromagnetic induction.
  - b) Derive e.m.f. equation of single phase transformer.
  - c) A capacitor of  $30\mu\text{F}$  is connected in series with resistor of  $120\Omega$ . The circuit is supplied with AC supply of 230V, 50Hz determine
    - i) Capacitive reactance
    - ii) Impedance
    - iii) Current
    - iv) Circuit power
  - d) Explain construction of single phase induction motor with working principle.
  - e) Compare two winding transformer and autotransformer.
- 3. Attempt any TWO of the following:** **12**
- a) Compare electric and magnetic circuit.
  - b) Draw R-C series circuit. Draw waveform and phasor diagram for the same. Write equation of current voltage and power for this circuit.
  - c) With neat sketch, describe the construction and working principle of single phase induction motor.

**SECTION - II**

- 4. Attempt any FIVE of the following:** **10**
- a) Define passive components with two examples.
  - b) Give classification of resistors.
  - c) Draw symbol of P-N junction diode and give its two applications.
  - d) Define PIV.
  - e) Draw symbol of PNP and NPN transistor and give its applications.
  - f) Draw input and output characteristics of CE configuration of transistor.
  - g) Define  $\alpha$  and  $\beta$  of transistor.

- 5. Attempt any THREE of the following:** **12**
- a) Explain ideal and practical current source with suitable diagram.
  - b) Distinguish between analog and digital IC.
  - c) Compare CB, CC and CE configurations.
  - d) Describe operation of transistor as switch with suitable diagram.
- 6. Attempt any TWO of the following:** **12**
- a) With neat constructional sketch explain the working of Light Emitting diode.
  - b) With the help of neat circuit diagram explain the working of center tapped full wave rectifier. Draw input and output voltage waveform.
  - c)
    - i) Explain how to obtain the value of given resistor using colour code.
    - ii) Find the value of resistor from given colour code.  
Orange, Orange, Brown Gold.
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