[This question paper contains 4 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **2444** **IC**

Unique Paper Code : 32223903

Name of the Course : **B.Sc. (Prog.) : SEC**

Name of the Paper : Electrical Circuits and Network Skills

Semester : VI

Time : 3 Hours ***Maximum Marks : 50***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt **five** questions in **all**.

(c) Question **NO.1** is compulsory.

(d) **All** questions carry equal marks.

1. Attempt any **five** : 2,2,2,2,2

(i) Explain Ohm's law with examples.

(ii) Discuss about different type of conductors.

P.T.O.

(iii) Draw the circuit diagram of a practical current source.

(iv) Discuss about the phase reversal.

(v) Draw the phasor diagram and waveform of voltage and current for a pure inductive circuit.

(vi) Explain about the overload devices.

(vii) The current through a 100 μF capacitor is given below. Find the sinusoidal expression for voltage across the capacitor.

$i = 40 \sin (500t + 60^{\circ})$

2. (a) Discuss in details about a digital multimeter. 5

(b) Explain in details about single phase and three phase ac sources. 5

3. (a) Describe the construction and working of a transformer. 5

(b) Describe the construction and working of an ac generator. Support your answer with relevant diagrams. 5

4. (a) State Thevenin's Theorem. 2

(b) Mention the steps to Thevenize an electrical circuit. 2

(c) In an electrical circuit with V_{th} as Thevenin equivalent voltage, R_{th} as Thevenin equivalent resistance, calculate the value of load resistance(R_L) to get the maximum power. Explain with circuit diagram. 2

(d) In case of electrical symbols, show the symbols for phase shifter (3-wire), bridge rectifier, dc current source, and zener diode. 4

5. (a) Discuss the basic design and working of a three phase motor with relevant diagram. 6

(b) Discuss the basic design and working of a dc motor with relevant diagram. 4

6. Describe the construction and working of half-wave and full-wave rectifiers in details. 4,6

7. Write short notes on any **two** of the following : 5,5

(i) Solid and Stranded Cables.

(ii) Cable Trays.

(iii) Extension board.

(iv) Losses across cables and conductors