Exam.Code:0905
Sub. Code: 33250

2076
B.E., First Semester
EEC-X01: Basic Electrical and Electronics Engineering
(Common with CIVIL, BIO and ECE)

Time allowed: 3 Hours | Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

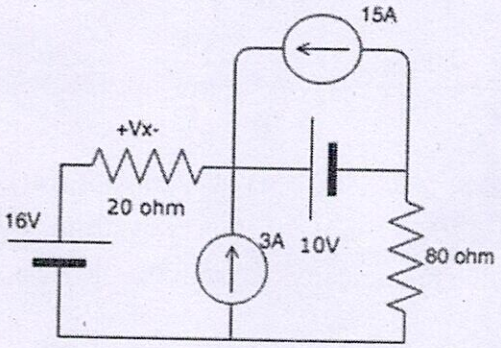
a) Is Norton current a *Short circuit* current or *Open circuit* current? Does Norton theorem apply to circuits with BJTs?

b) Differentiate between a Clipper and a Clamper circuit.

c) Mention the purpose of rectification.

d) Define current gain in a CB configuration.

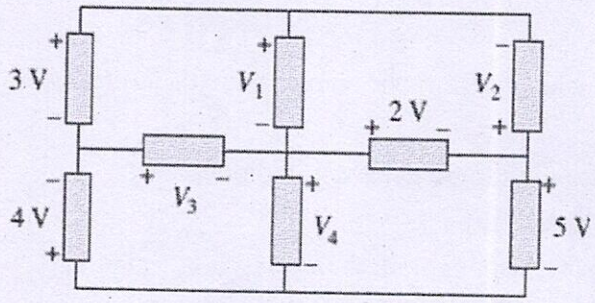
e) Find the value of Vx due to the 16V source.



(5x2)

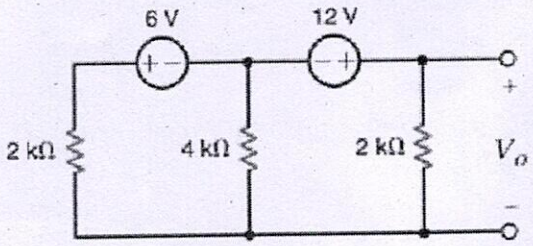
UNIT - I

II. a) For the given circuit, use the KVL to find the branch voltages V1 to V4.



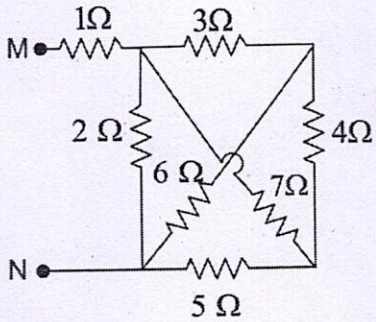
Contd.....P/2

b) Use Thevenin's theorem to find V_o in the following network.



(2x5)

III. a) Find the resistance between terminals M and N for the given network using star-delta transformation.



b) A sinusoidal voltage is given by v(t) = 240 sin(314t). Derive expressions for the **average value** and **RMS value** of this waveform over one complete cycle. Calculate the RMS value numerically. Explain the physical meaning of RMS value in AC circuits. (2x5)

IV. What is the need for a transformer? With the help of diagrams, explain open-circuit and short-circuit tests. (10)

UNIT - II

V. What are Intrinsic and Extrinsic semiconductor diodes? Describe Zener diode. (10)

VI. Implement following logic gates using diodes:
a) AND logic gate
b) OR logic gate. Also, explain their operation. (2x5)

VII. Discuss the operation and applications of common-collector configuration. (10)

x-x-x