J. C. Bose University of Science & Technology, YMCA, Faridabad

Department of Electrical Engineering

Sessional-1 Basic Electrical Technology (ELU-101-V)

(B.Tech 1st Sem Mechanical (M11) and RAI)

Time: 1:30 Hr **Max Marks-15**

Note: Attempt three questions. Part A is compulsory, and attempt two questions from Part B.

PART-A

Q-1

a) Define the terms: bilateral and unilateral circuit. (CO1)

b) Define the duality between Thevenin's and Norton's equivalent circuits. (CO1)

c) An alternating voltage is represented by $v=141.4 \sin 377t$. Find i) maximum value, ii) frequency, iii) time period, and iv) rms value. (CO2)

d) What are the advantages of an AC supply system over a DC? (CO1)

e) State some applications of the maximum power transfer theorem. (CO1) (5 x 1 = 5 marks)

PART-B

Q.1. Determine the current in each branch using nodal analysis. Fig. 1 (CO1) (5)

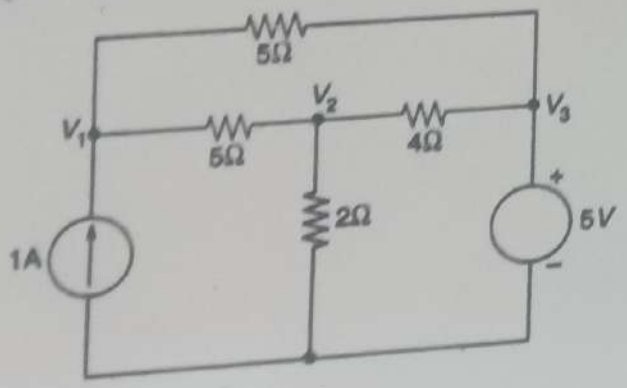

Fig-1

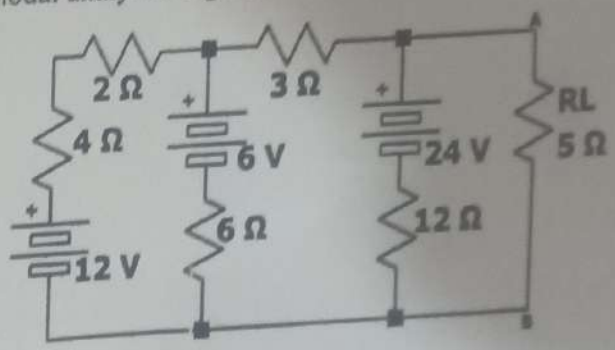

Fig-2

Q.2. Find the current through resistance 'RL' using Norton's Theorem in Fig. 2. (CO1) (5)

Q.3. Find the average value, rms value, form factor, and peak factor of the delayed half-wave rectified sinusoidal waveform shown in Fig. 3. (CO2) (5)

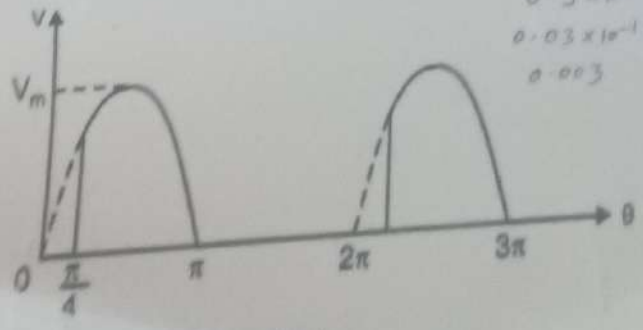

Fig-3