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

Sessional-1st (B-Tech 1st Semester Electronics)

BASIC ELECTRICAL TECHNOLOGY (ESC 101A)

Time: 1:30 hrs **Max. Marks: 15**

Note: Part-A is compulsory. Attempt any two questions from Part-B

Part-A

Q. 1. a) Define Cycle, Time period, Frequency and Phase difference in alternating quantity. (1)

b) Define Power triangle, Impedance triangle and Power factor? (1)

c) Derive condition of maximum power regarding Maximum power transfer theorem? (1)

d) What is the difference between active and passive elements & ideal current and ideal voltage sources? (1)

e) Define current division rule and voltage division rule with examples. (1)

Part-B

Q. 2) Derive RMS value (I_{rms}) and Average value (I_{av}) for Full and Half Sinusoidal waves. (5)

Q. 3) Find Thevenin and Norton models from Fig. 1 and hence find current flowing through 10 Ω resistor. (5)

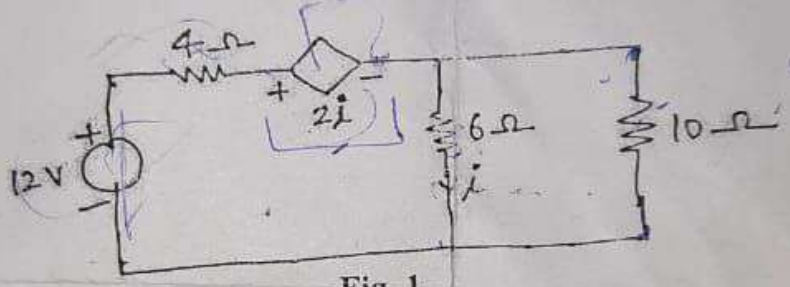

Fig. 1

Q. 4) From Fig. 2, find: (1) R_L such that maximum power will be transferred to R_L, (2) Value of this maximum power, (3) Power supplied by source under this condition and (4) maximum efficiency. (5)

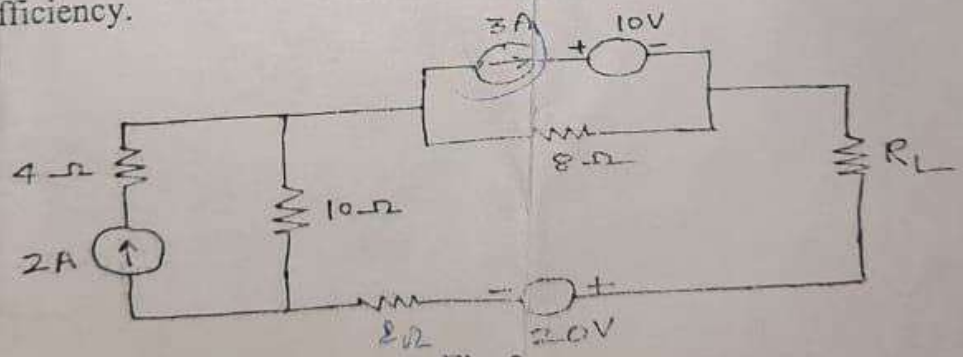

Fig. 2

Q. 5) State and define Superposition Theorem. Using Superposition Theorem find "I" in Fig. 3. (5)

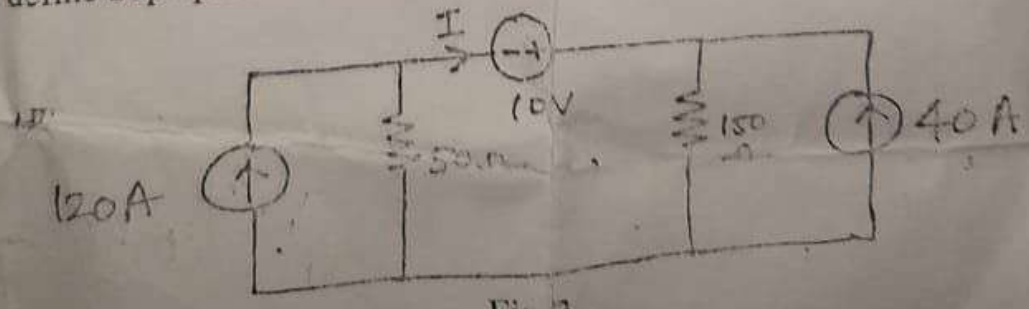

Fig. 3