Exam. Code: 0906
Sub. Code: 33296

2055
B.E. , Second Semester
EC-204: Electrical Science

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: ***Attempt <u>five</u> questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.***

x-x-x

I. Attempt the following:

a. Define dependent and independent voltage and current source?
b. Define the principle behind superposition theorem.
c. Explain the concept of duality.
d. What is the composite filter?
e. Explain the role of concept of slip in electrical motors. (5x2)

Section A

II. a). Determine the current supplied by each battery in the circuit shown in fig. 1.

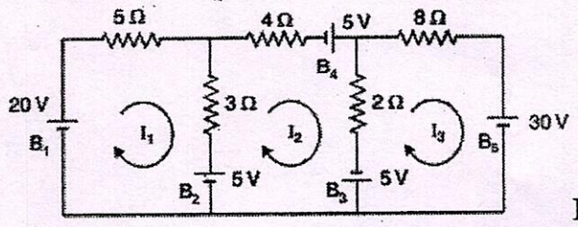

Fig. 1

b). State and prove maximum power transfer theorem with example. (2x5)

III. a). Find the Thevenin's equivalent of the circuit shown fig.2,across terminals a-b. Then find the current through R_L = 6 ohms and 36 ohmsrespectively.

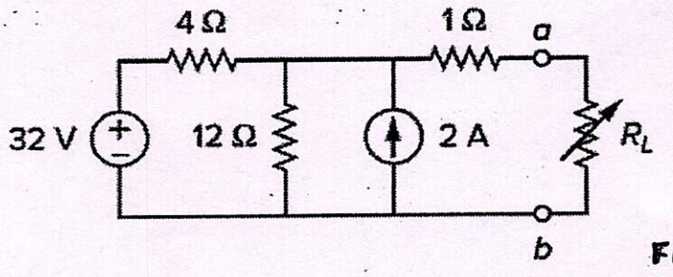

Fig.2

b). What is the relation between star and delta connections? (2x5)

IV. a. Explain the concept of complex frequency. Also discuss its physical significance?

b. Explain with reason, the given expression for the deriving point impedance is suitable or not for representing a passive network.

$$Z(s)= s\,4 - s\,3 + 2s\,2 / (s+4)(s+3)$$ (2x5)

P.T.O.

Section B

V. Explain the following Two port network parameter.

a). Short Circuit Impedance Parameters.

b). Hybrid Parameters. (2x5)

VI. Design constant-k, m-derived filters and composite filter. (10)

VII. a). Define the principle behind single phase induction motor. Write some applications.

b). What are different speed control methods for DC motor. (2x5)

x-x-x