Code: 13A04101 **R13**

B.Tech I Year (R13) Supplementary Examinations June 2017

NETWORK ANALYSIS

(Common to ECE & EIE)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

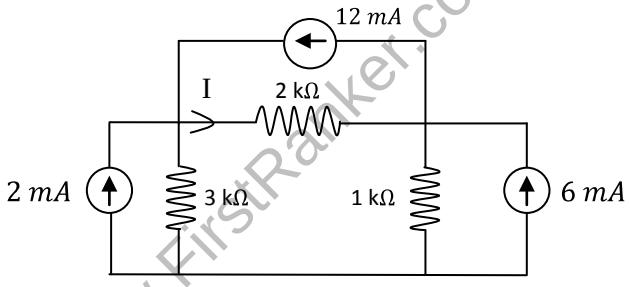
(a) State superposition theorem.
(b) Define cutset of a graph.
(c) Define natural response of a network.
(d) What is power factor?
(e) What is the condition for resonance of an RLC series circuit?
(f) Define coupling coefficient.
(g) What are state variables?
(h) What is the condition on transmission parameters for a reciprocal network?
(i) What is a m-derived filter?
(j) Define propagation constant.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

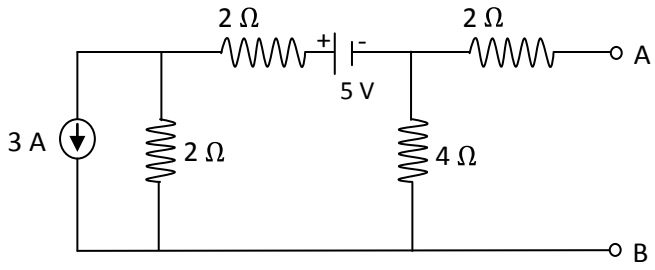
UNIT - I

2 By using nodal analysis find the current I in the following circuit.



OR

3 Obtain Thevenin's equivalent for the circuit shown in figure below.



UNIT - II

4 Derive the source free response of RL circuit.

OR

5 The impedance of a circuit is $Z = (6 + j8)\Omega$ and the applied voltage is $V = 50\angle 45°$ volts. Determine average & apparent powers & p.f.

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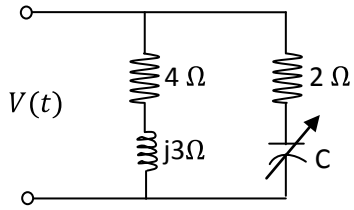
UNIT - III

6 Prove that for an RLC series circuit the resonant frequency is geometric mean of upper and lower half power frequencies.

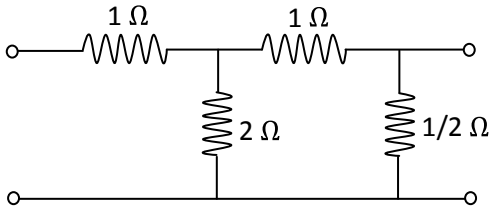
OR

7 Determine the value of C for which the circuit is resonant when W = 2000 rad/sec.



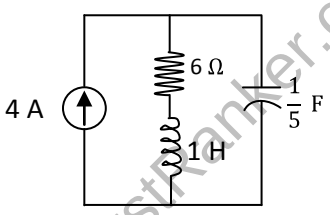
UNIT - IV

8 Find the Y-parameters for the network shown in figure below.



OR

9 Find the state variable equation for the circuit shown in figure below.



UNIT - V

10 Discuss the properties of symmetrical network.

OR

11 Design a m-derived low pass filter having cut-off frequency of 1 kHz, design impedance of $400\ \Omega$ and the resonant frequency of 1100 Hz.

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