

Registration no:

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Total Number of Pages: 02

B.TECH
BEES2211

3rd Semester Regular / Back Examination 2015-16

NETWORK THEORY

BRANCH(S): AEIE,CSE,EC,EEE,EIE,ELECTRICAL,ETC,IEE,IT

Time: 3 Hours

Max Marks: 70

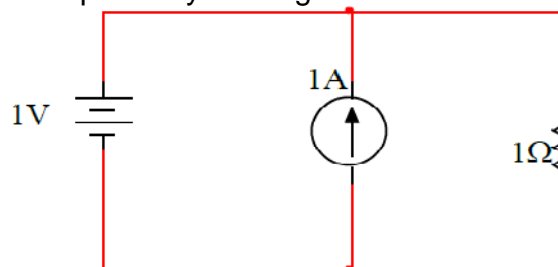
Q.CODE: T684

**Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.**

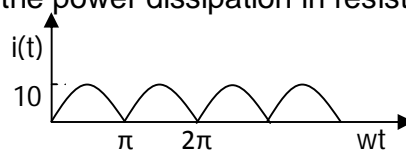
Q1 Answer the following questions:

(2 x 10)

- a) Explain how voltage source with a source resistance can be converted into an equivalent current source.
- b) Determine the initial and final values of the corresponding time function given
 $F(s) = (5s^2 + 3s + 3) / s(s^2 + 4)$
- c) Determine the power consumed by the voltage source, current source and resistance respectively in the given circuit.



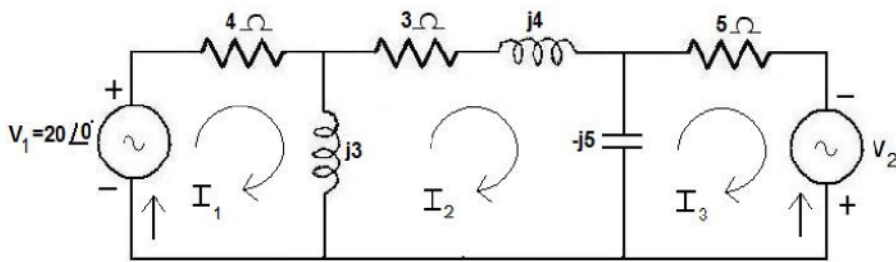
- d) A capacitor is charged by a constant 10mA current source which is turned on for 1 second. Assuming the initially uncharged, determine the power supplied by the source if the capacitor has a value of 1 mf.
- e) Why are the electronics circuit generally operated under maximum power transfer condition?
- f) Explain odd symmetry and its significance.
- g) Mention different methods for finding out inverse laplace transform ?
- h) Define, what do you mean by minimum phase and non minimum phase function.
- i) Mention the condition for a network to be loss less in terms of ABCD parameters.
- j) The current wave form as shown in fig is passed through resistor of 100ohms. What is the power dissipation in resistor?



- Q2** a) A series RLC circuit is resonant at 1 Megacycle/sec. its bandwidth is 5000cps & input impedance at resonance is 50 ohms. Find values of R,L,C. (6)
 b) Define Norton and Thevenin theorem with example (4)
- Q3** a) Write a short note on mutual coupling in mesh analysis . (4)
 b) Find out inverse Laplace transform of following. (6)
 a) $1/(s^2+w^2)$
 b) 1
 c) $1/s$.

- Q4** A resistance R and 4 microfarad capacitor are connected in series across a 230V direct supply. Across the capacitor there is a neon lamp that strikes at 120V. Calculate R to make the lamp strike 5 sec after the switch has been closed. If R = 5Megohm, how long will it take the lamp to strike? (10)

- Q5** a) Determine the value of V_2 such that the current through the impedance $(3+j4)$ ohm is zero. (5)



- b) When connected to a 230V, 50Hz single phase supply, a coil takes 10kVA and 8kVAR. For this coil calculate resistance, inductance of coil and power consumed. (5)
- Q6** a) Determine the quality factor of a coil $R = 10$ ohm, $L = 0.1$ H and $C = 10\mu$ F. (5)
 b) What information do poles and zeros provide in respect of network to which they relate? (5)
- Q7** a) What are the various types of interconnections possible in 2 port network? Explain. (5)
 b) Define Superposition theorem and explain why this theorem is verified in only under bilateral network? (5)
- Q8** Write short notes on any two (5 x 2)
 a) Tellgen's theorem
 b) Rotational symmetry
 c) Unit functions
 d) ABCD Parameters