GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

B. Tech (Third Semester - Regular) Examinations, November – 2024

23BEEPC23002 - NETWORK THEORY

(EE/EEE)

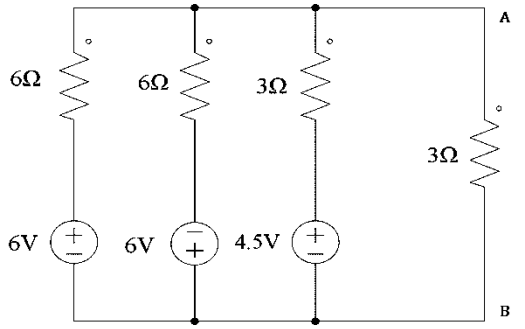
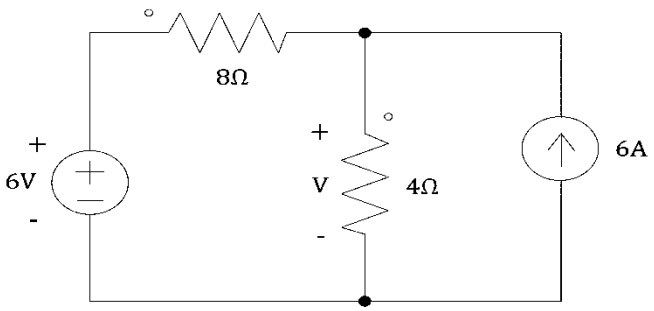
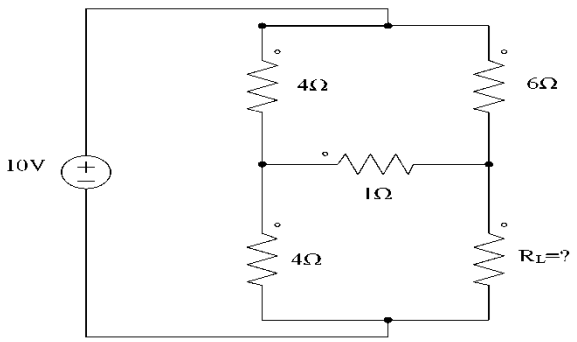
Time: 3 hrs Maximum: 60 Marks

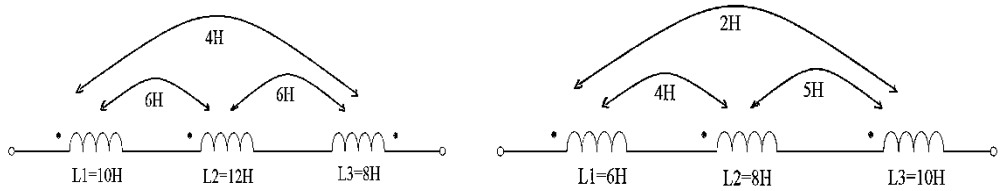
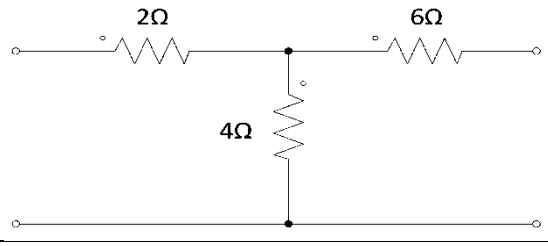
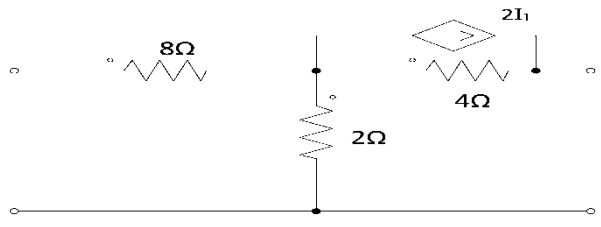
(The figures in the right hand margin indicate marks)

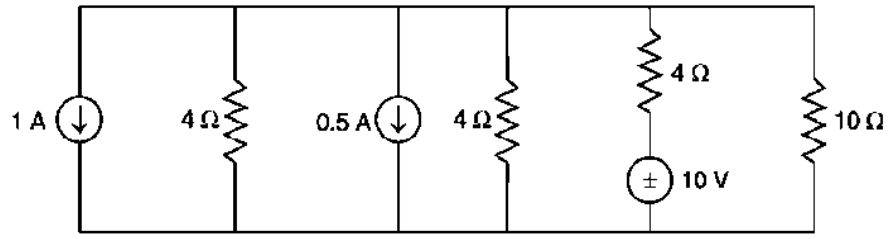
PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO	Blooms Level
a. State Kirchhoff's current and voltage Law ?	CO1	K1
b. State the superposition Theorem?	CO1	K1
c. Explain the reciprocity condition for a two-port network?	CO1	K2
d. What is the purpose of a filter in a network?	CO2	K2
e. What is the Laplace Transform of sinbt and cosbt?	CO1	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	By using Thevenin's Theorem calculate the current flowing through between terminal A & B? 	5	CO1	K2
b.	Different between Thevenin's Theorem and Norton's Theorem?	5	CO1	K2
	(OR)			
c.	By using superposition Theorem Calculate the voltage 'V' in the given circuit? 	5	CO1	K2
d.	Find the value of load resistance for which the maximum power will be transfer to the circuit? 	5	CO1	K2

3.a.	A series RLC Circuit has the following parameters values. Resistance- 10 ohm , Inductance- 0.014 H, Capacitance – 100 µF Compute the following 1. Resonant Frequency in rad/sec. 2. Quality Factor of the circuit. 3. Band width. 4. Lower and upper frequency point of the bandwidth.	5	CO4	K2
b.	What is the Resonance Frequency and derive the condition for resonance Frequency?	5	CO3	K3
	(OR)			
c.	Explain Bandwidth of Series R-L-C circuit and Quality Factor?	5	CO4	K1
d.	Determine the resonant Frequency, Bandwidth and Quality Factor of the series RLC circuit with R= 10Ω, L= 0.1H, C=10 µF.	5	CO4	K2
4.a.	**i)** How does the co-efficient of coupling affected the mutual inductance of two coils? **ii)** If two coils have self-inductance of L1=4H and L2=9H, and their mutual inductance =6H calculate the co-efficient of coupling?	5	CO3	K2
b.	Find the total inductance from the given two circuits. 	5	CO3	K2
	(OR)			
c.	State the Laplace transform of an exponential function?	5	CO3	K3
d.	How does inductive reactance change with frequency in a resonance circuit?	5	CO2	K2
5.a.	Find the Z-Parameter of the below given 2-port network? 	5	CO2	K2
b.	Find the Y parameter of the given 2-port network? 	5	CO2	K2
	(OR)			
c.	A function in Laplace domain in given by F(s) = $\left[\frac{2}{s} - \frac{1}{s+3}\right]$ obtain its initial value and final value Theorem?	5	CO3	K2
d.	Explain the types of Filter.	5	CO5	K1
6.a.	State and explain the maximum power transfer theorem.	5	CO1	K2

b.	Calculate the current through 10Ω and voltage drop across it for the circuit shown in fig by using Milliman's Theorem.  	5	CO1	K4
	(OR)			
c.	Derive the Transient Response of series RL-circuit with D.C excitation.	5	CO3	K2
d.	Derive the condition for maximum resonant frequency.	5	CO3	K2

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