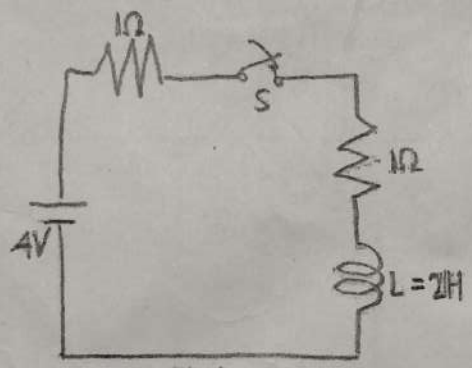
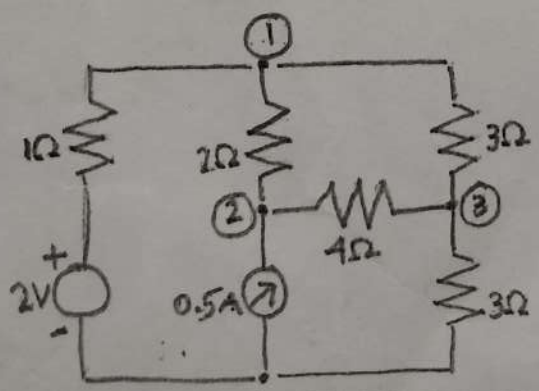
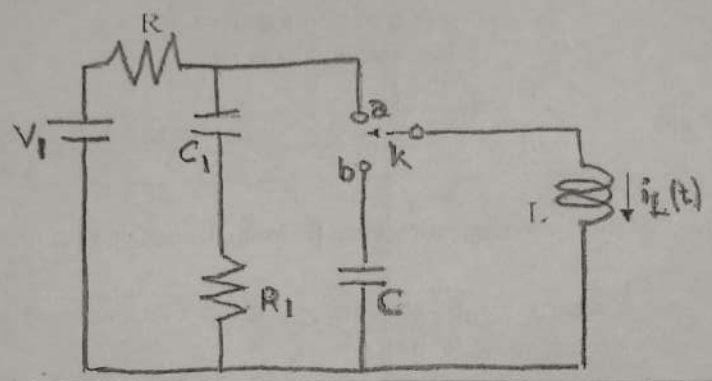
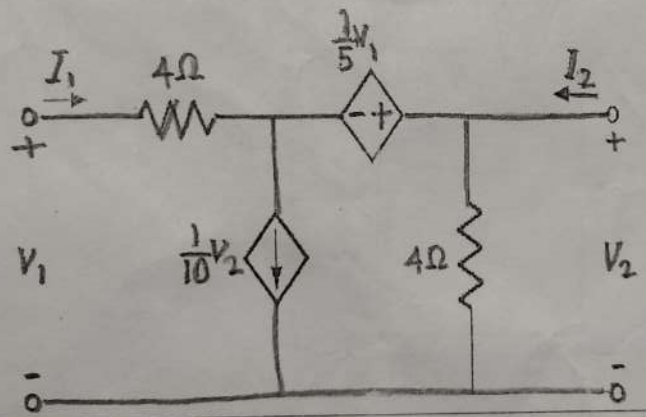
(Please write your Enrollment Number) Enrollment No._____

End-Term Examination
(CBCS)(SUBJECTIVE TYPE)(OffLine)
B.Tech:<>, III Semester:<>
(December, 2024)

Subject Code: BEC 205	Subject: Network Analysis and Synthesis
Time :3 Hours	Maximum Marks :60

Note: Q1 is compulsory. Attempt one question each from the Units I, II, III & IV.

Q1		(2.5*8=20)	CO Mapping
	a) What is source transformation technique? Explain by transforming a voltage source to a current source and vice versa.		CO1
	b) Explain KCL and KVL.		CO1
	c) In the circuit shown in Figure, the switch s is closed at t=0 then determine the steady state value of the current. 		CO2
	d) What do you understand by time constant of a circuit?		CO1
	e) If Z= (4+j6) Ohm then find the value of Conductance G and Susceptance B?		CO2
	f) Derive the condition of symmetry in terms of Z -parameters		CO2
	g) What do you understand by positive real function?		CO1
	h) What are the necessary conditions for driving point functions?		CO1
	UNIT I		**CO Mapping**
Q2	Prove that maximum power is delivered from a source having internal impedance Zs, to a connected load impedance ZL, when ZL=Zs*.	(10)	CO2
Q3	Using nodal analysis, find the power dissipated in the 4 ohm resistor of the network shown in Figure. 	(10)	CO3

	UNIT II		CO Mapping
Q4	The switch K, as shown in the Fig.4 is in steady state position 'a' for t<0. At t=0, it is shifted to position 'b'. Find iL(t), for t≥0. 	(10)	CO3
Q5	What is graph theory? Explain its applications with one example.	(10)	CO3
	UNIT III		CO Mapping
Q6	Find T parameters of the circuit shown in figure below: 	(10)	CO4
Q7	What do you understand by h-parameters? Derive h-parameters for a two port network and clearly explain the procedure. Draw the equivalent circuit model.	(10)	CO2
	UNIT IV		CO Mapping
Q8	Explain concept of poles & zeroes. Discuss restrictions on pole and zero locations for driving point functions.	(10)	CO2
Q9	Synthesize a network using Foster-I and Foster -II forms for the impedance function: $$Z(s) = \frac{s(s^2+9)}{(s^2+5)(s^2+13)}$$	(10)	CO4