DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Summer Examination – 2024

Course: B. Tech. **Semester : IV**

Branch : Electrical and Power/Electrical & Electronics Engineering/Electrical Engineering

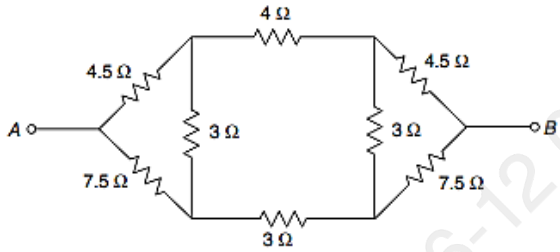
Subject Code & Name: Network Theory (BTEEC401)

Max Marks: 60 **Date: 12/06/2024** **Duration: 3 Hr.**

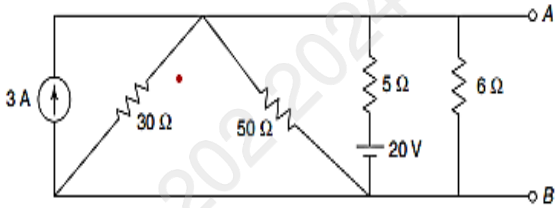
Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

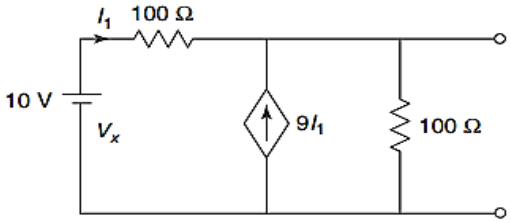
		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Find an equivalent resistance between A and B in the network of Figure.	Understanding	**6**



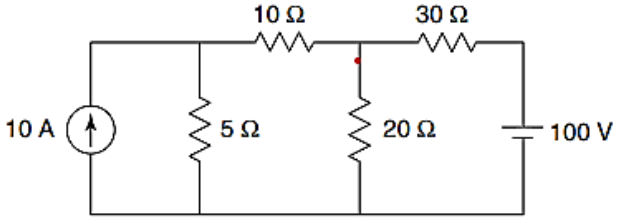
B)	Replace the circuit between A and B in Figure with a voltage source in series with a single resistor.	Remembering	**6**



C)	State and Explain classification of Elements with their examples.	Understanding	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	State and Explain Maximum Power Transfer Theorem.	Remembering	**6**
B)	Determine Thevenin's equivalent network.	Understanding	**6**



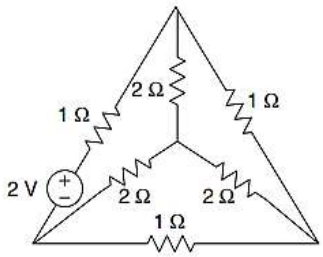
C)	Find the current through the 10 Ω resistor by using superposition theorem.	Remembering	**6**



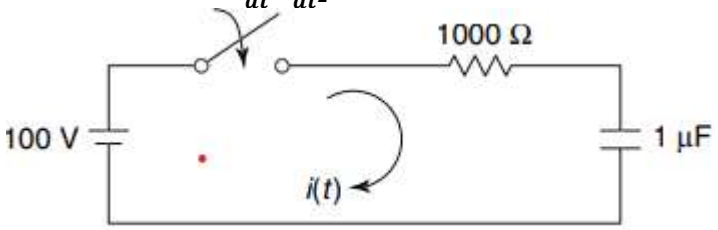
Q. 3 Solve Any Two of the following. **12**

A) Obtain transient response of driven R-C series circuit. Remembering **6**

B) Write down the tieset matrix and incidence matrix. Remembering **6**

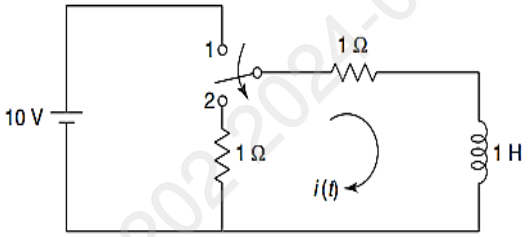


C) In the network of Figure, the switch is closed at t = 0. With the capacitor uncharged, find value for i , $\frac{di}{dt}$, $\frac{d^2i}{dt^2}$ at t = 0+. Understanding **6**

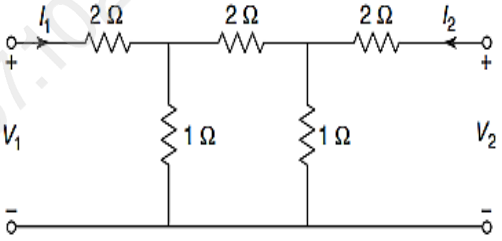


Q.4 Solve Any Two of the following. **12**

A) In the network of Figure, the switch is moved from the position 1 to 2 at t = 0, steady-state condition having been established in the position 1. Determine i (t) for t > 0 using Laplace Transform. Understanding **6**



B) Find Y-parameters of the network shown in Figure. Understanding **6**



C) What is the physical significance of Pole and Zero in a Transfer Function? Remembering **6**

Q. 5 Solve Any Two of the following. **12**

A) Explain High pass filter and band pass filter. Understanding **6**

B) What is meant by resonance in series RLC circuit? Derive equation for resonant frequency. Remembering **6**

C) A series RLC circuit has the following parameter values: R = 10 W , L = 0.01 H, C = 100 mF. Compute the resonant frequency, bandwidth, and lower and upper frequencies of the band width. Understanding **6**

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