U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Programme: B.E. **Semester: III**
Branch: ECE/ML **Duration: 3 hrs.**
Course Code: 22ES3PCNAL **Max Marks: 100**
Course: Network Analysis

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Apply mesh analysis and solve for voltage across 3kΩ for the circuit shown in fig 1.1 **10**

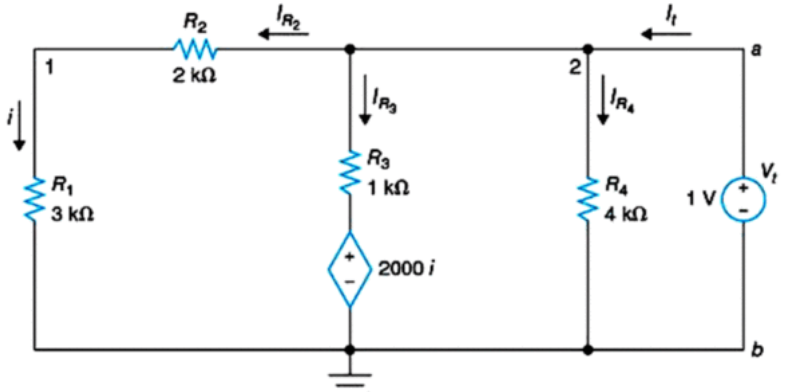


fig 1.1

b) For the network shown below, Use nodal analysis to find all node voltages shown in fig 1.2 **10**

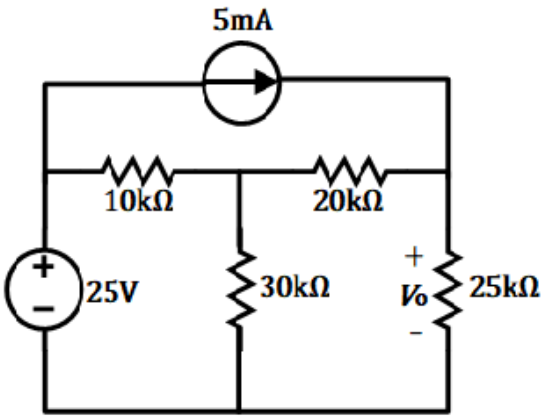


fig 1.2

OR

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

2 a) Use mesh current method to find the power delivered by 10V source in the circuit shown in fig 2.1 **10**

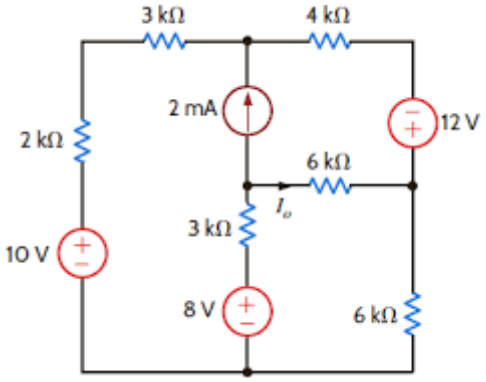


fig 2.1

b) Explain source transformation source shifting and Star Delta conversions with relevant examples **10**

UNIT - II

3 a) Derive the expression for the cutoff frequency, bandwidth and quality factor for a Series resonant circuit **10**

b) A parallel resonance network has R=60Ω, C=120μF and L=200mH connected across voltage of 100v. Calculate f_0, B.W., Q factor and circuit current at resonance. **10**

UNIT - III

4 a) State and explain thevenin's theorem **05**

b) Prove reciprocity theorem for the circuit shown in fig 4.1 **08**

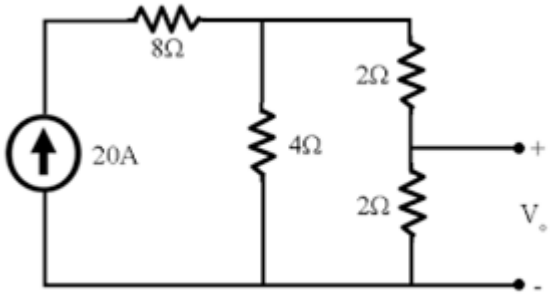


Fig 4.1

c) Find R_L for maximum power transfer for the circuit shown in fig 4.2 **07**

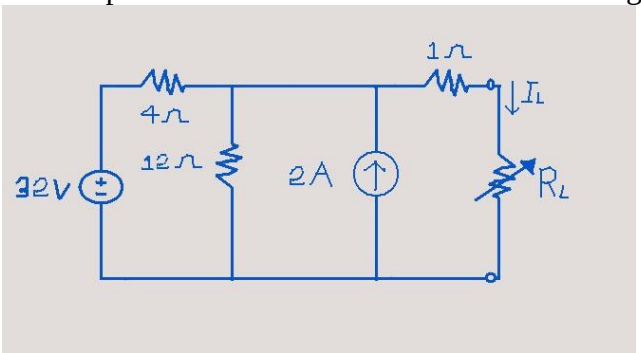
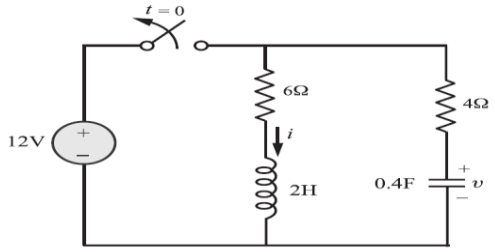


fig 4.2

UNIT - IV

5 a) A steady state is reached when switch k is closed. At t=0 switch is opened. For the circuit shown in fig 5.1, find i(0+), V(0+) and $di(0^+)/dt$ **10**



b) Find the Laplace transform of the waveform shown in fig 5.2 **10**

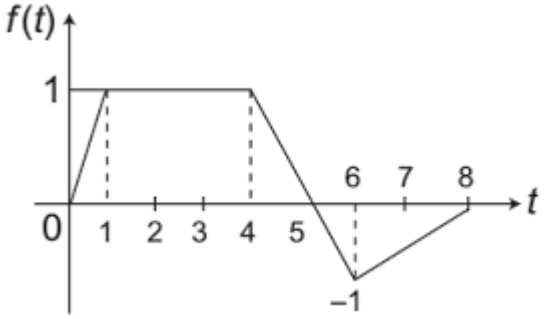


fig5.2

OR

6 a) Find the Laplace transform of the waveform given in fig 6.1 **07**

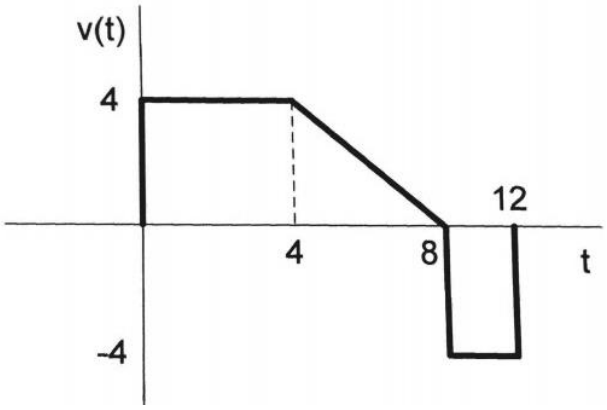


fig6.1

b) State and prove initial value theorem **05**

c) For the network shown in fig 6.2 switch k is closed and steady state has been reached. At t=0, switch is opened. Find i(0+), di(0+)/dt, $d^2i(0+)/dt^2$ **08**

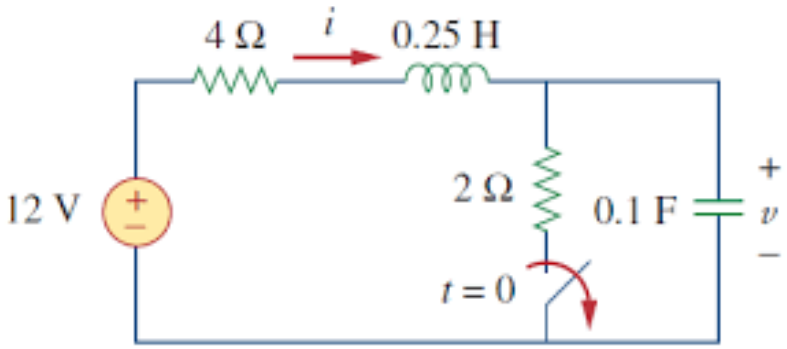


Fig 6.2

UNIT - V

7	a)	Define T parameters.		**04**
	b)	Obtain the relation between Z and h parameters		**08**
	c)	For the circuit shown in fig 7.1 find T parameters.		**08**

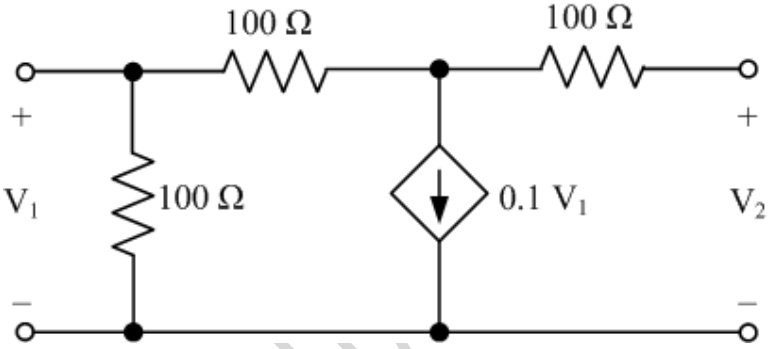


fig 7.1

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