U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2023 Semester End Make-Up Examinations

Programme: B.E.
Branch: ECE/ML
Course Code: 22ES3PCNAL
Course: Network Analysis

Semester: III
Duration: 3 hrs.
Max Marks: 100
Date: 11.08.2023

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 V_0 for the circuit shown in fig 1.1 **10**

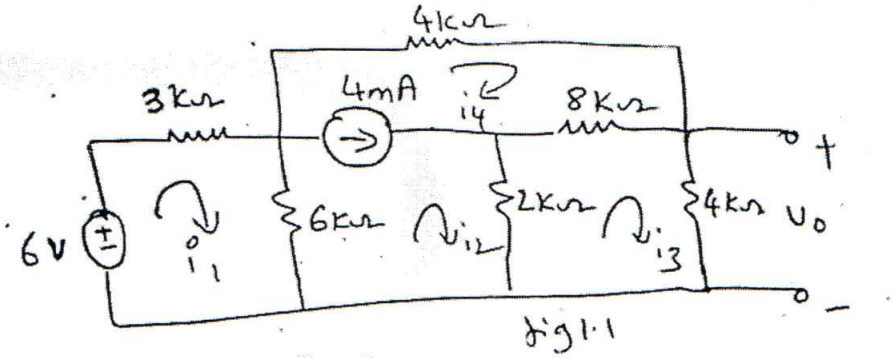


fig 1.1

b) Use nodal analysis to find V_1 and V_2 for the circuit shown in fig 1.2 **10**

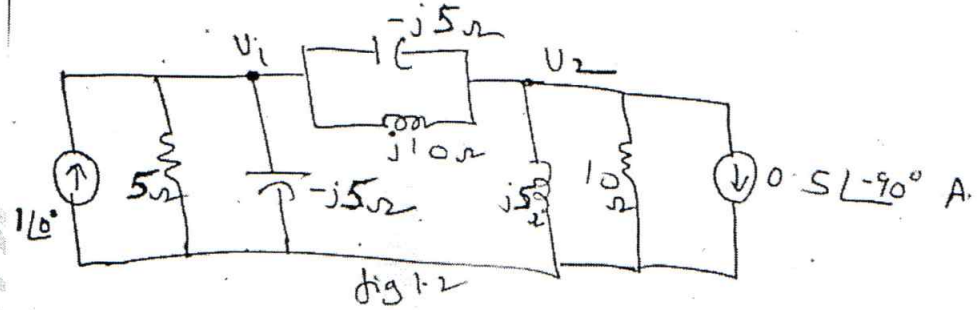


fig 1.2

OR

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

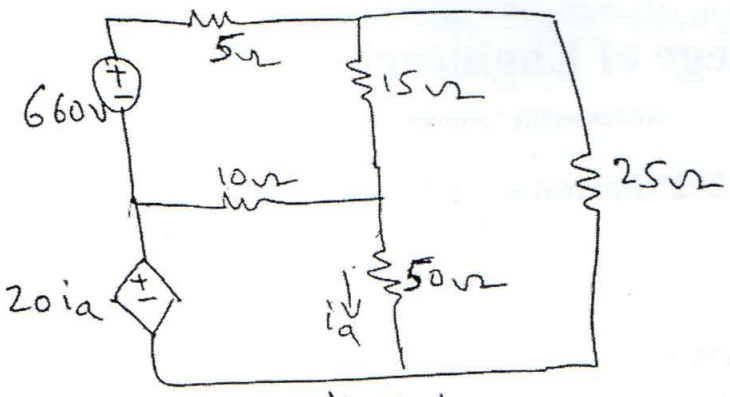


fig 2.1

b) Simplify the circuit shown in fig 2.2 using source transformation and source shifting and find the value of V_x. **10**

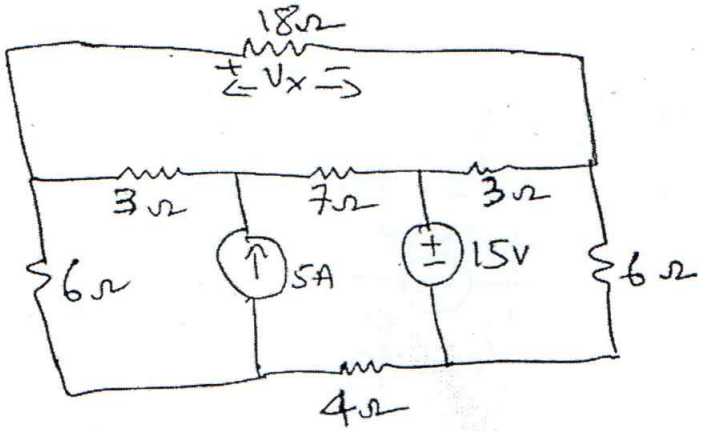


fig 2.2

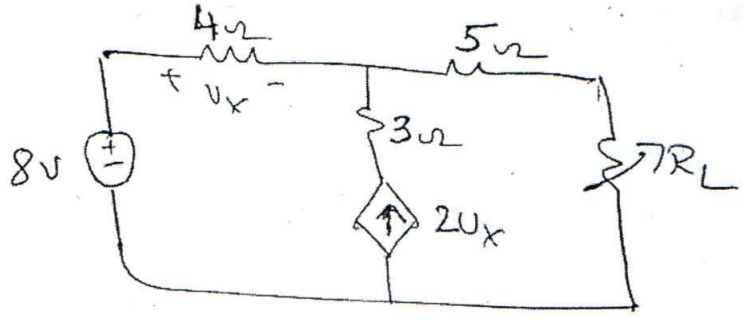
UNIT - II

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) Determine the value of R_L for maximum power transfer and also calculate the value of maximum power. **07**



b) State and prove reciprocity theorem. **07**

c) Find the Norton equivalent of the network shown in fig 4.1 **06**

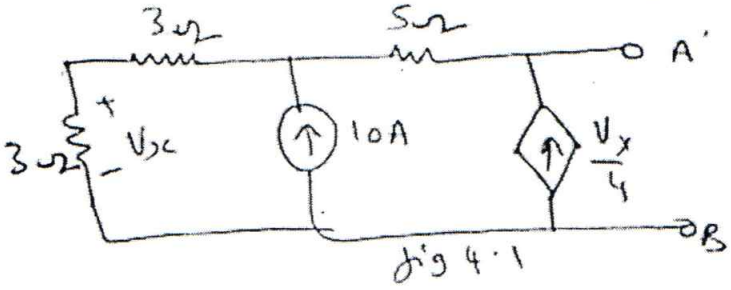


fig 4.1

UNIT - IV

5 a) State and prove final value theorem. **05**

b) A steady state is reached when switch k is at position 1. At t=0 switch is moved from 1 to 2. Find i, di/dt and d^2i/dt^2 at $t=0^+$for the circuit shown in fig 5.1 **10**

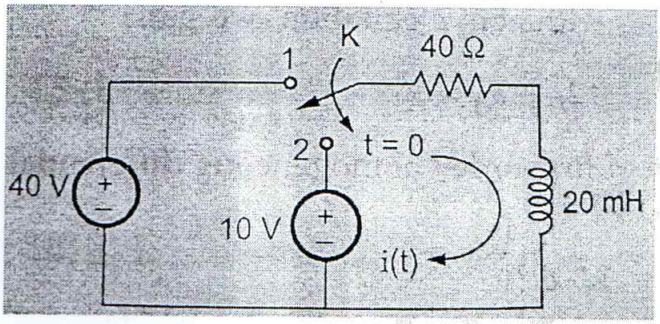


fig 5.1

c) Find the Laplace transform of the waveform shown in fig5.2 **05**

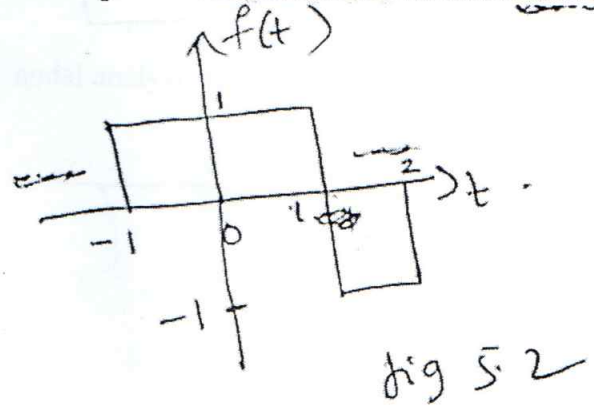


fig 5.2

OR

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

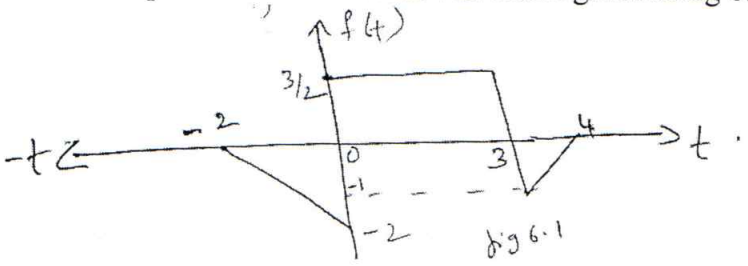


fig 6.1

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

c) For the network shown in fig6.2 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**

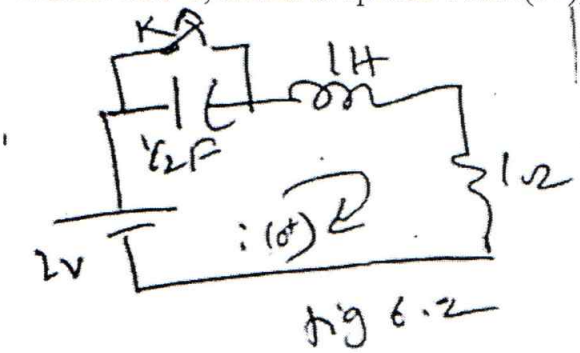


fig 6.2

UNIT - V

7 a) Define h parameters. **04**

b) Derive the relationship between Z and T parameter. **08**

c) For the circuit shown in fig 7.1 find T parameters. **08**

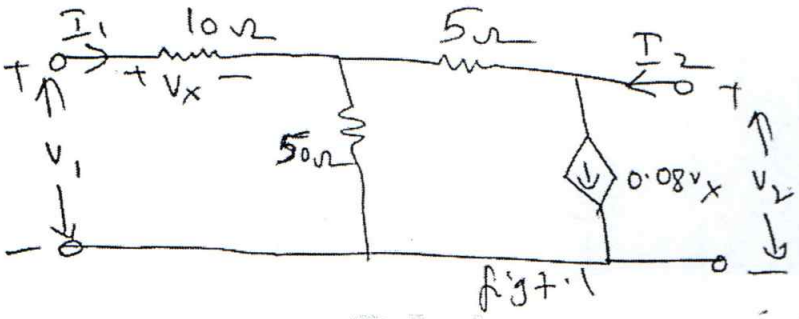


fig 7.1

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