BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)
B.Tech.Sem - IV ELECTRICAL :SUMMER- 2022
SUBJECT : NETWORK & SYNTHESIS

Day : Thursday
Date : 16-06-2022

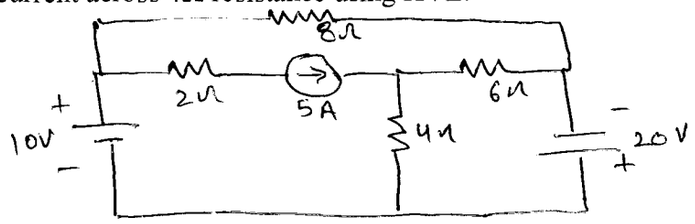
S-24549-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labeled diagram **WHEREVER** necessary.
4) Assume suitable data if necessary.

Q.1 **a)** Find the current across 4Ω resistance using KVL. **[05]**

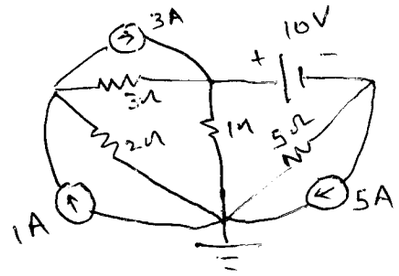


b) Explain the concept of duality and dual network. **[05]**

OR

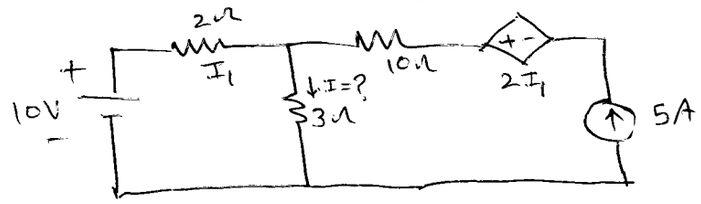
Q.1 **a)** Explain the following terms: **[05]**
i) Non-linear element **ii)** Controlled voltage source **iii)** Active element
iv) Bilateral element **v)** Lumped element

b) Find the nodal voltages of given circuit. **[05]**



Q.2 **a)** Explain F-cut set and B- tie set matrix **[05]**

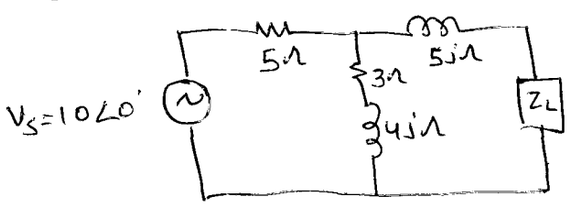
b) Calculate current across 3Ω resistance using superposition theorem. **[05]**



OR

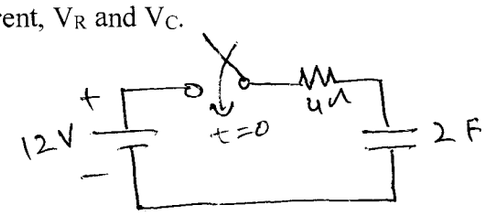
Q.2 **a)** Explain reciprocal and Millman's theorem with example. **[05]**

b) Find the value of Z_L so that maximum power can be transferred. Also find maximum power value. **[05]**

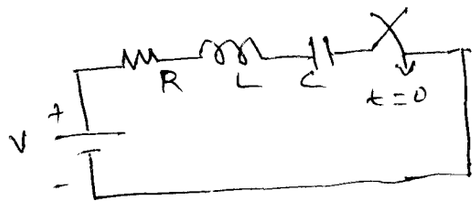


P.T.O.

Q.3 **a)** Find current, V_R and V_C. **[05]**

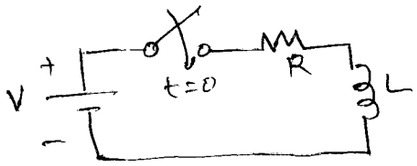


b) Find V_R, V_L and V_C values. **[05]**



OR

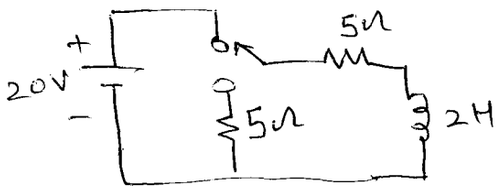
Q.3 **a)** Find V_R and V_L values. **[05]**



b) Explain RLC circuit with sinusodial excitation. **[05]**

Q.4 **a)** Explain final value theorem. **[05]**

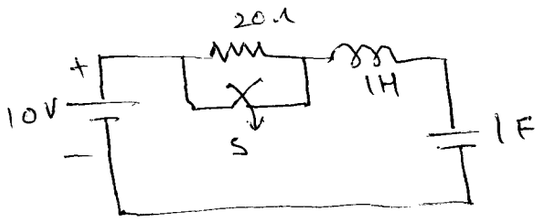
b) Switch is moved from 1 to 2 at time t = 0. The steady state current having previously established in RL circuit. Find i(t) after switching. **[05]**



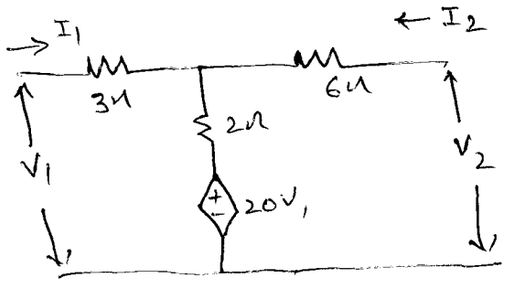
OR

Q.4 **a)** Find the laplace transform of $f(t) = e^{-at}\cos wt$. **[05]**

b) Switch is closed at t = 0. Find voltage across resistor, inductor and capcitor. **[05]**



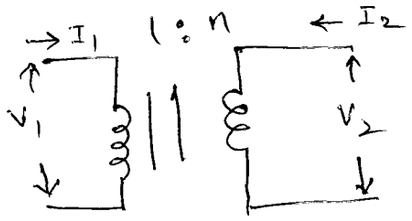
Q.5 **a)** Find z and h parameters of given circuit. **[05]**



b) Explain low pass and high pass filters with example. **[05]**

OR

Q.5 **a)** Find z, y, ABCD and h – parameters. **[05]**



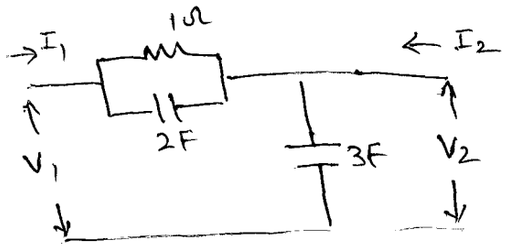
b) Explain m-dervied Low pass and High pass filters. **[05]**

Q.6 **a)** Explain the concept of poles, zeros, and transfer function and system stability relationship with pole zeros. **[05]**

b) Explain parallel resonance to find f_0 and Q_0. **[05]**

OR

Q.6 **a)** Find $\frac{I_1}{V_2}$ for given circuit, also find pole zero and stability of ratio $\frac{I_1}{V_2}$. **[05]**



b) Explain why system is stable when pole zeros are on LHS of s-plane with example. **[05]**

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