B.Tech. SEM -IV Electrical 2014 Course (CBCS) : WINTER - 2018

SUBJECT:NETWORK ANALYSIS

Day: Thursday
Date: 15/11/2018

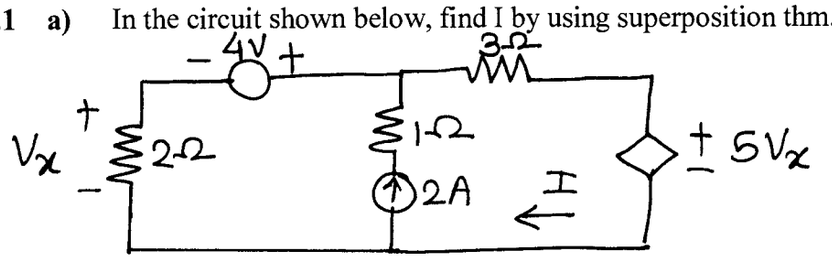
W-2018-2344

Time: 02.30 PM TO 05.30 PM
Max Marks. 60

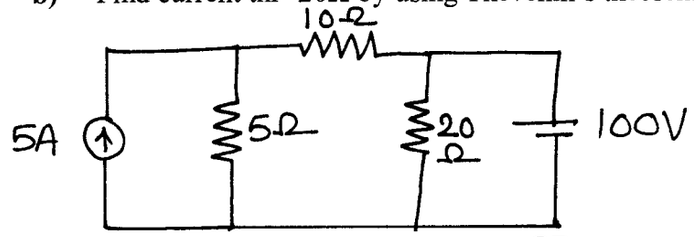
N.B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if **necessary**.
4) Use non-programmable **calculator** is allowed.

Q.1 a) In the circuit shown below, find I by using superposition thm. **(05)**

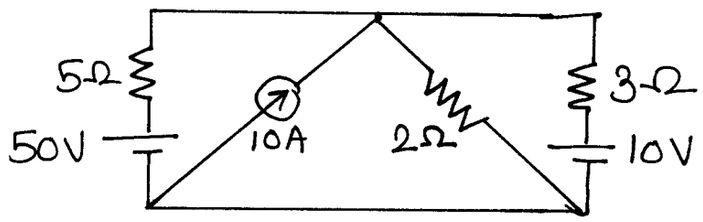


b) Find current thr' 20Ω by using Thevenin's theorem. **(05)**

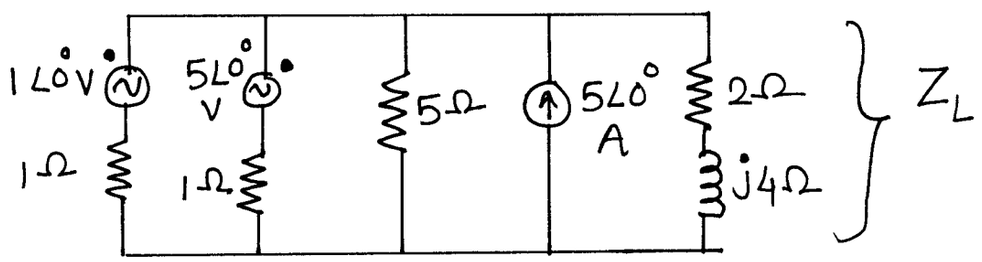


OR

Q.1 a) Find power delivered by 50V source in circuit using source transformation. **(05)**

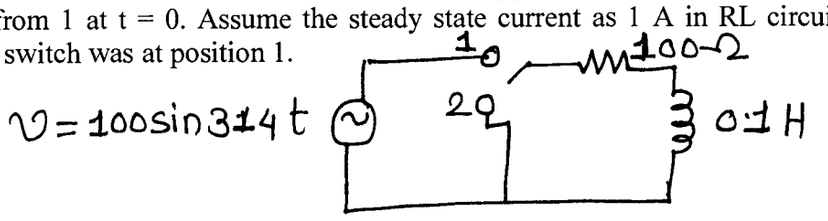


b) Using Millmann's theorem. Find current in load Z_L.



Q.2 a) Determine the expression of current in series R-L circuit when it is excited by sinusoidal excitation. **(05)**

b) Obtain the current at t > 0 if an ac voltage V is applied when switch is moved to 2 from 1 at t = 0. Assume the steady state current as 1 A in RL circuit when switch was at position 1. **(05)**

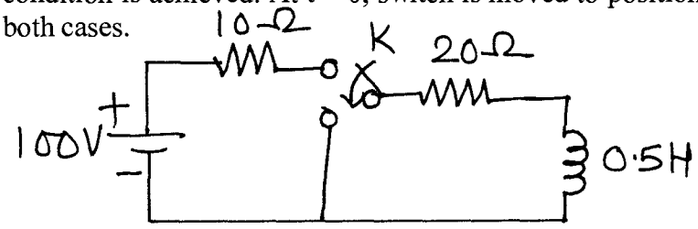


P.T.O.

OR

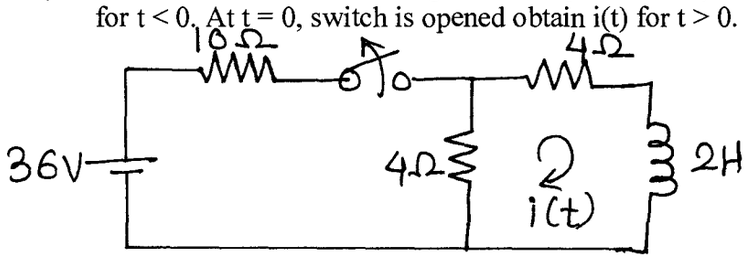
Q.2 a) Derive the expression of current in series R-C circuit when it is excited by sinusoidal excitation. **(05)**

b) In following circuit, the switch k is kept first at position 1 and steady state condition is achieved. At t = 0, switch is moved to position 2, find current in both cases. **(05)**



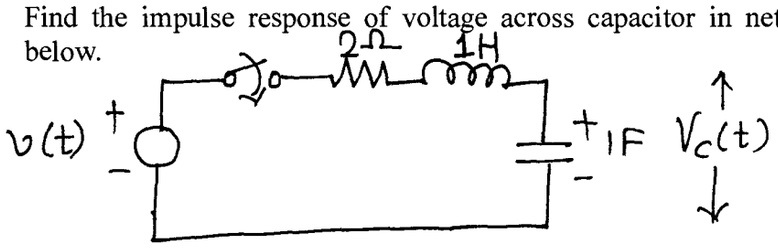
Q.3 a) Derive the expression of current in series R-L-C circuit when it is fed by step response. **(05)**

b) The network shown in the figure has acquired steady state with switch closed for t < 0. At t = 0, switch is opened obtain i(t) for t > 0. **(05)**

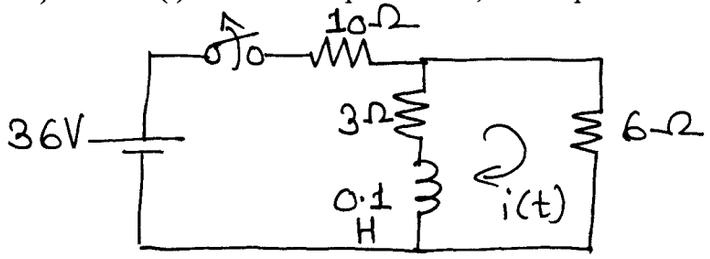


OR

Q.3 a) Find the impulse response of voltage across capacitor in network shown below. **(05)**

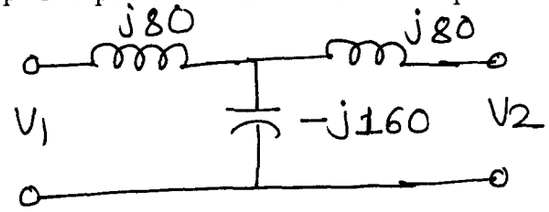


Q.3 b) Find i(t) if switch is open at t = 0, Use Laplace transform approach. **(05)**



Q.4 a) Express Z parameters in terms of ABCD parameters. **(05)**

b) **(05)**

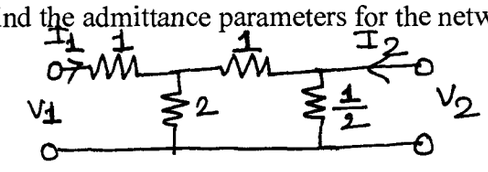


Final Y and Z parameters.

OR

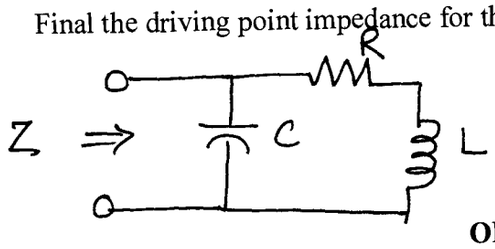
Q.4 a) Draw a neat labeled basic equivalent circuit for Y parameters. **(05)**

b) Find the admittance parameters for the network. **(05)**



Q.5 a) Discuss the restrictions on poles and zeros for transfer function. **(05)**

b) Final the driving point impedance for the networks



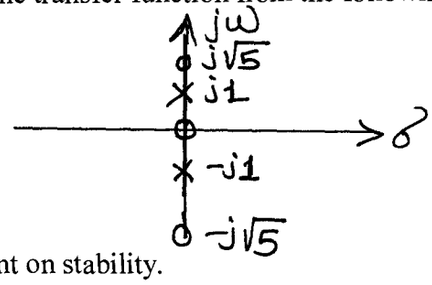
OR

Q.5 a) Obtain the pole zero plot for the following functions. **(05)**

$$H(s) = \frac{s^2 + 4}{s^2 + 6s + 4}$$

$$H(s) = \frac{5s - 12}{s^2 + 4s + 13}$$

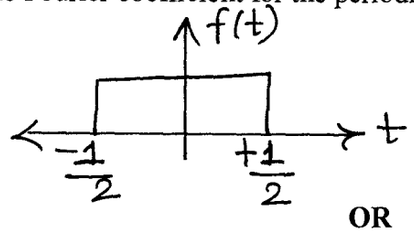
b) Obtain the transfer function from the following pole zero plot.



Comment on stability.

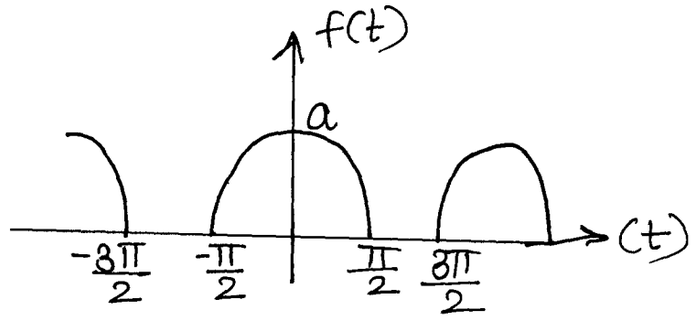
Q.6 a) State and explain the trigonometric form of Fourier series. **(05)**

b) Find the Fourier coefficient for the periodic signal.



OR

Q.6 a) Find the fourier series of half wave rectified sine wave shown. **(05)**



b) Define and explain in brief

- Even and odd symmetry
- Half wave symmetry

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