

Module-2

- 3 a. State and explain superposition theorem. (08 Marks)
b. Obtain Thevenin's equivalent circuit across A and B for the network shown in Fig.Q3(b).

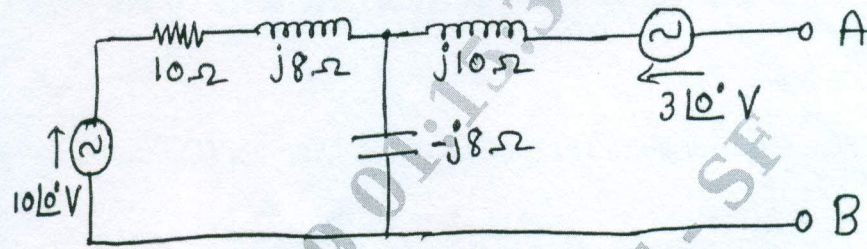


Fig.Q3(b)

(08 Marks)

OR

- 4 a. State and explain Millman's theorem. (08 Marks)
b. Find the value of Z_L in the circuit shown in Fig.Q4(b) using maximum power transfer theorem and hence the maximum power.

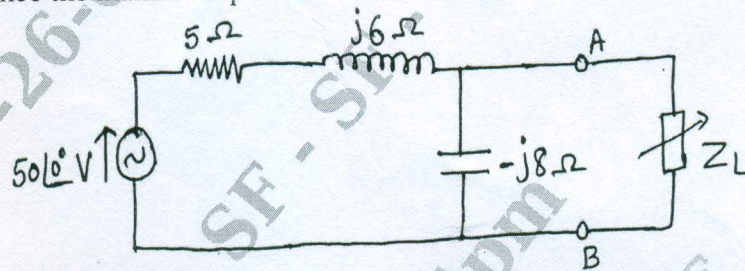


Fig.Q4(b)

(08 Marks)

Module-3

- 5 a. State and prove initial value theorem and final value theorem. (08 Marks)
b. In the network shown in Fig.Q5(b), K is changed from position a to b at $t = 0$. Solve for i , $\frac{di}{dt}$ and $\frac{d^2i}{dt^2}$ at $t = 0^+$, if $R = 100 \Omega$, $L = 0.1 \text{ H}$ and $C = 0.25 \mu\text{F}$ and $V = 100 \text{ V}$. Assume that the capacitor is initially uncharged.

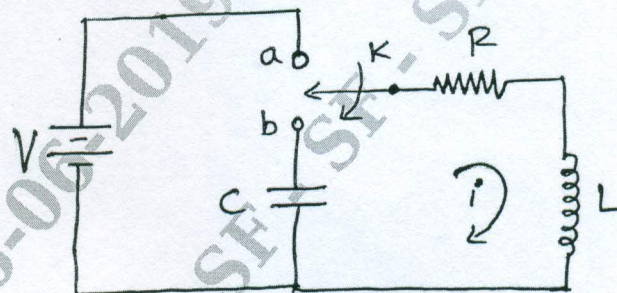


Fig.Q5(b)

(08 Marks)

OR

- 6 a. What is the significance of initial conditions? Write a note on initials and final conditions in basic circuit elements. (08 Marks)
b. Find the Laplace transform of (i) $f(t) = u(t)$ (ii) $f(t) = t$. (08 Marks)



Module-4

- 7 a. Derive an expression for half power frequencies for a series resonant circuit, (08 Marks)
 b. For the network shown in Fig.Q7(b), find the value of L at which circuit resonates at a frequency of 600 rad/sec.

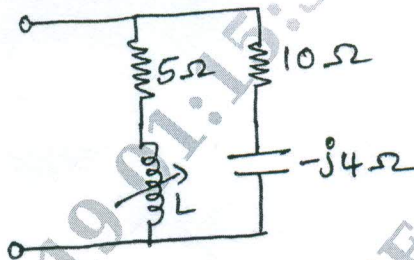


Fig.Q7(b)

(08 Marks)

OR

- 8 a. Obtain the expression for the resonant frequency and the dynamic impedance of a parallel resonant circuit. (08 Marks)
 b. An RLC series resonant circuit draws a maximum current of 10 Amps, when connected to 230 V, 50 Hz supply. If the Q-factor is 5, find the parameters of the circuit. (08 Marks)

Module-5

- 9 a. Derive the Y-parameters in terms of ABCD parameters. (08 Marks)
 b. Obtain the h-parameters for the circuit shown in Fig.Q9(b).

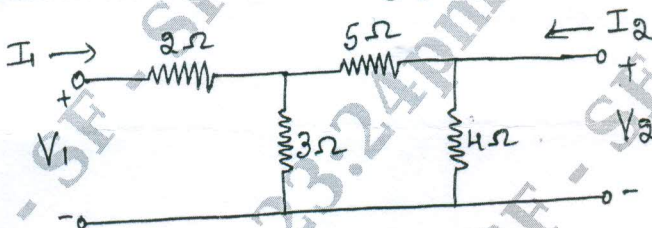


Fig.Q9(b)

(08 Marks)

OR

- 10 a. Express h-parameters interms of z-parameters. (08 Marks)
 b. Find the y-parameters for the circuit shown in Fig.Q10(b). The use parameter relationships to find h-parameter.

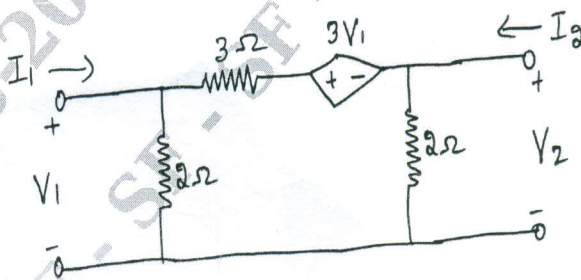


Fig.Q10(b)

(08 Marks)
