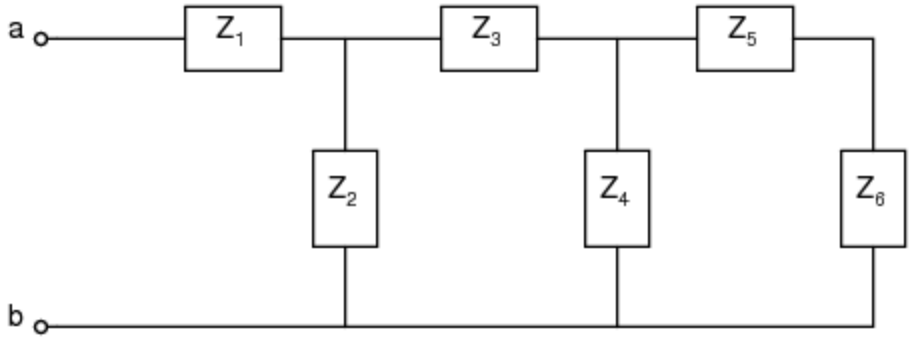
Rajiv Gandhi University of Knowledge Technologies

Week Test-6

Date: 29.09.2012 **Subject:** NT **Time:** 30 Min

Course: E2Sem1_ECE, CSE **Max Marks:** 10

1)Find driving point impedance Z_{ab} for the ckt shown in fig below



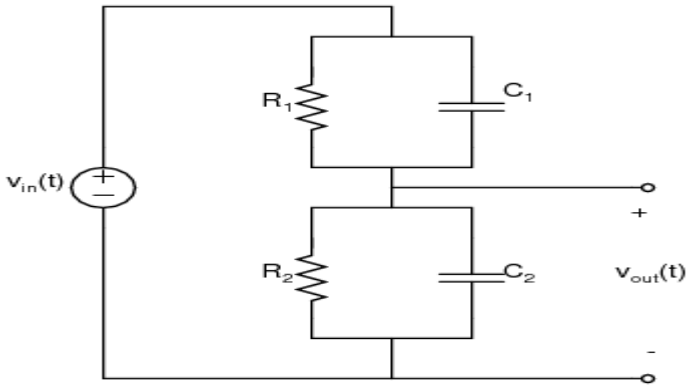
a) $Z_1 + \cfrac{1}{Y_2 + \cfrac{1}{Z_3 + \cfrac{1}{Y_4 + \cfrac{1}{Z_5 + \cfrac{1}{Y_6}}}}}$

b) $Z_1 + \cfrac{1}{Y_2 + \cfrac{1}{Y_3 + \cfrac{1}{Y_4 + \cfrac{1}{Z_5 + \cfrac{1}{Y_6}}}}}$

c) $Z_1 + \cfrac{1}{Z_2 + \cfrac{1}{Z_3 + \cfrac{1}{Z_4 + \cfrac{1}{Z_5 + \cfrac{1}{Z_6}}}}}$

d)None

2) If $R_1C_1=R_2C_2=\tau$, what is the Transfer function, $H(s)=\frac{V_{out}(s)}{V_{in}(s)}$ for the circuit shown below. Assume all initial conditions are zero.



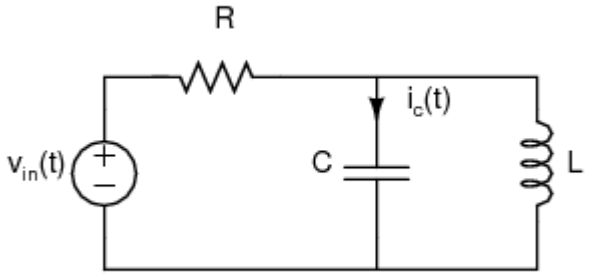
a) $\frac{R_2\tau s+1}{R_1(\tau s+1)+R_2(\tau s+1)}$

b) $\frac{R_1(\tau s+1)}{R_1(\tau s+1)+R_2(\tau s+1)}$

c) $\frac{R_1}{R_1+R_2}$

d) $\frac{R_2}{R_1+R_2}$

3) If L=1H, C=0.5F, R=$\frac{2}{3}\Omega$ and $v_{in}(t)=e^{-t}u(t)$ V then what is $i_c(t)$ for the ckt shown in fig below. Assume all initial conditions are zero



a) $i_c(t) = (6e^{-2t} + 4.5te^{-t} + 1.5e^{-t})u(t)A$

b) $i_c(t) = (6e^{-2t} - 4.5e^{-t} + 1.5te^{-t})u(t)A$

c) $i_c(t) = (6e^{-2t} - 4.5te^{-t} + 1.5e^{-t})u(t)A$

d) $i_c(t) = (6e^{-2t} - 4.5e^{-t} - 1.5te^{-t})u(t)A$

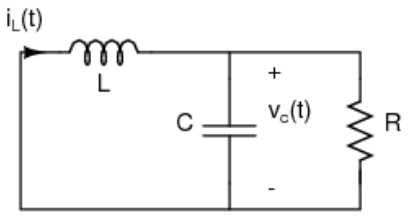
4) If L=0.25 H, C=0.4 mF, R=10 Ω then what is $v_c(t)$, for the circuit shown below. Given $v_c(0^-)=20$ V and $i_L(0^-)=4$ mA

a) $(26.6\cos 200t - 6.6\sin 50t)u(t)$ V

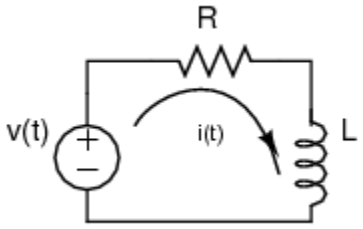
b) $(-6.6e^{-200t} + 26.6e^{-50t})u(t)$ V

c) $(26.6e^{-200t} + 6.6e^{-50t})u(t)$ V

d) $(26.6e^{-200t} - 6.6e^{-50t})u(t)$ V



5) If v(t)=e^{-t} is a Voltage source connected to a series RL ckt as shown in fig below. Given R=2 Ω, L=1 H. Find the current i(t). Given the initial current in the inductor is zero.



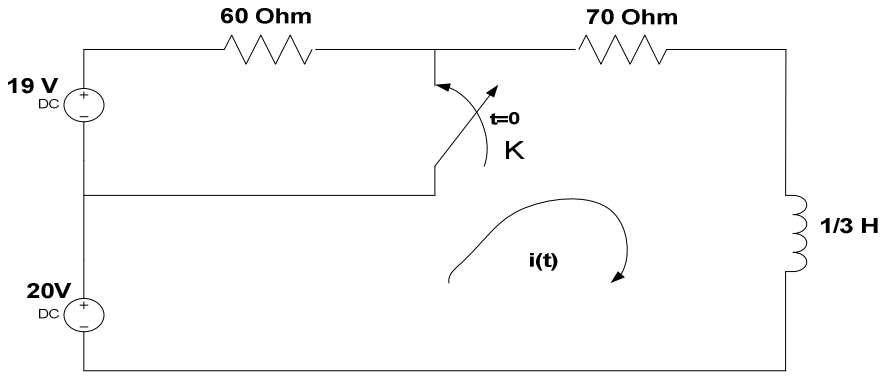
a) $i(t) = (-e^{-t} - e^{-2t})u(t)$

b) $i(t) = (-e^{-t} + e^{-2t})u(t)$

c) $i(t) = (e^{-t} - e^{-2t})u(t)$

d)None

6) For the circuit shown below, the switch is kept open until steady state is reached by the network . At t=0, switch 'K' is closed. Find i(t).



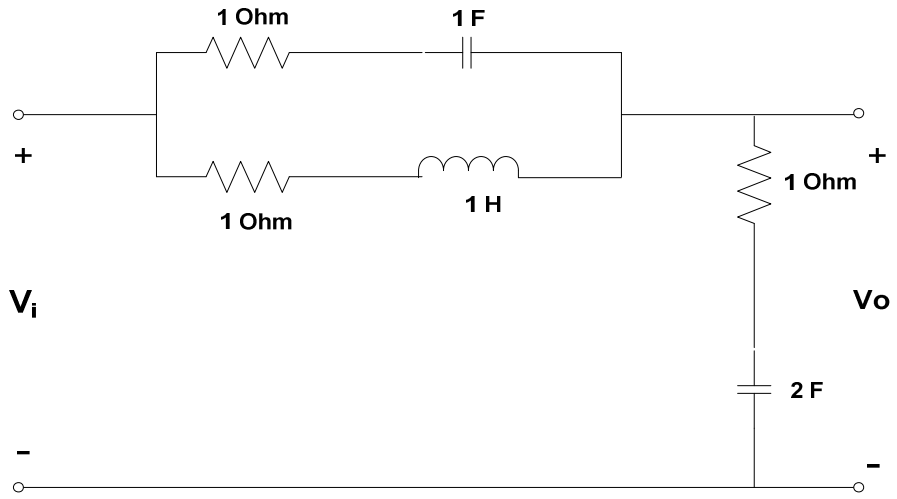
a) $i(t) = (0.29 + 0.014e^{-210t})u(t)$

b) $i(t) = (0.55 - 0.26e^{-210t})u(t)$

c) $i(t) = (0.55 - 0.28e^{-210t})u(t)$

d) $i(t) = (0.29 - 0.014e^{-210t})u(t)$

7) Find the transfer function H(s) = $V_0(S)$ / $V_i(S)$



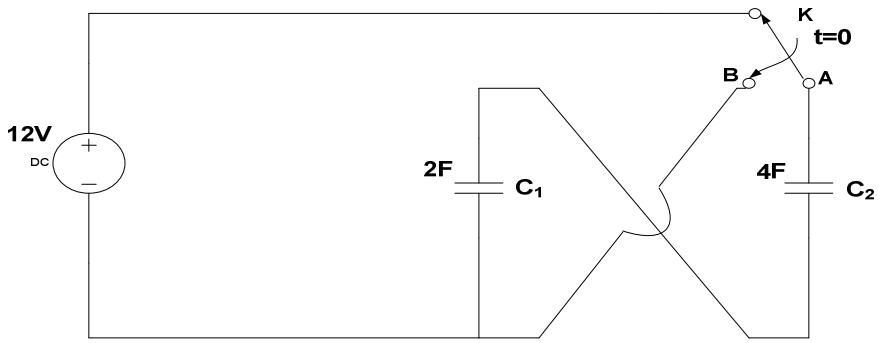
a) $\frac{2s+1}{4s+1}$

b) $\frac{4s^2+5s+1}{(2s+1)(s+1)}$

c) $\frac{s+2}{2(s+1)}$

d) $\frac{2s+1}{4(s+1)}$

8) For the circuit shown below switch moves form position A to position B at t=0, using S- domain analysis find $V_{2F}(t)$, $V_{4F}(t)$



a)2 V, 2V

b)16/3 V, 16/3 V

c)0 V, 0 V

d)-16/3 V, 16/3 V

9)Match the following for the graph given below

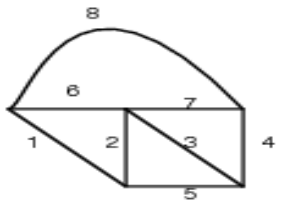
A. Twigs	(i)4,5,6,7
B. Links	(ii)1,2,3,8
	(iii)1,2,3,4,5
	(iv)6,7,8

a)A---(i), B----(ii)

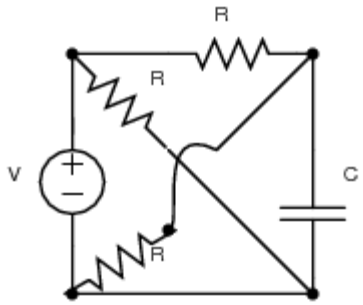
b) A---(iii), B----(iv)

c) A---(i), B----(iii)

d)None of the above



10) Determine the number of nodes and branches for the electrical network as shown below



a) 4 nodes, 6 branches

b) 3 nodes, 5 branches

c) 3 nodes, 6 branches

d) 4 nodes, 5 branches

KEY

1)a

2)d

3)b

4)d

5)c

6)a

7)a

8)c

9)a

10)b