SE - Sem-III - old - EXTC

11/06/15

EN

QP Code : 4689

(OLD COURSE) **QP Code:**

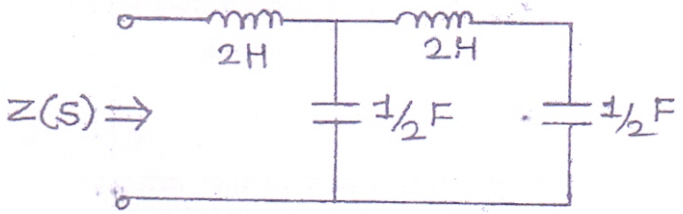
(3 Hours) [Total Marks:100]

N.B. : (1) Question No. **1** is **compulsory.**

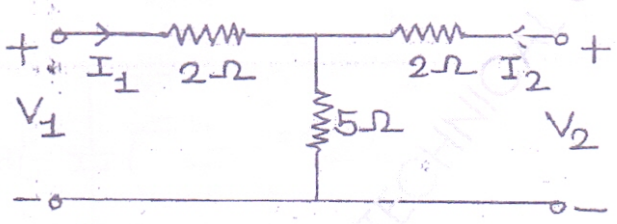
(2) Attempt any **four** from the **remaining** questions.

(3) **Assume** suitable **data, if required.**

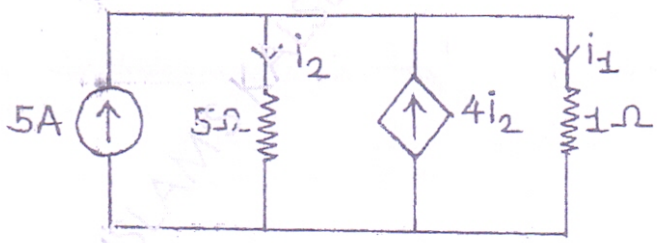
1.(a) Find the driving point impedance of network. 5



(b) For the given network find out z parameters and verify the condition of reciprocity. 5



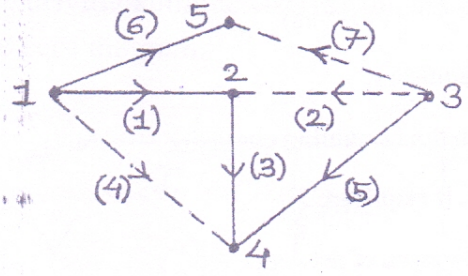
(c) Find current i1 and i2 in the given circuit. 5



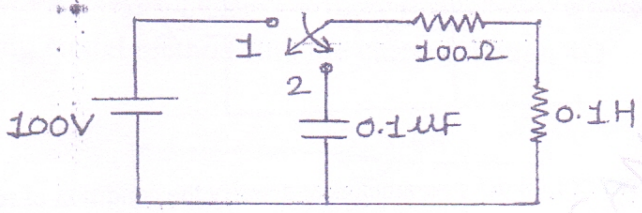
(d) Check for Hurwitz $P(s) = s^4 + 3s^2 + 2$. 5

2.(a) For the given tree (shown with firm lines) obtain. 10

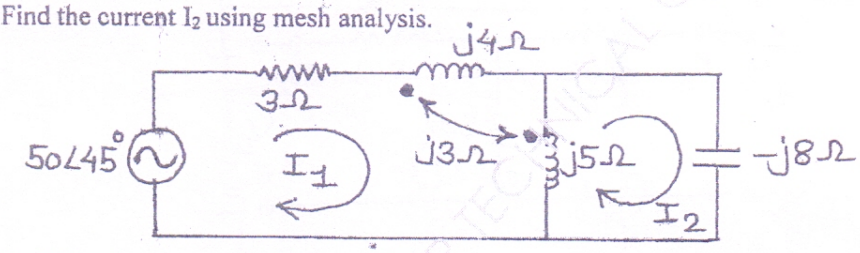
(i) Incidence matrix
(ii) Fundamental cutset matrix
(iii) Fundamental tieset matrix.



(b) For the given the given network, the switch is changed from position1 to 2 at time t=0.Find i, $\frac{di}{dt}$ and $\frac{d^2i}{dt^2}$ at $t=0^+$. Assume that steady state is reached at switch position 1. 10



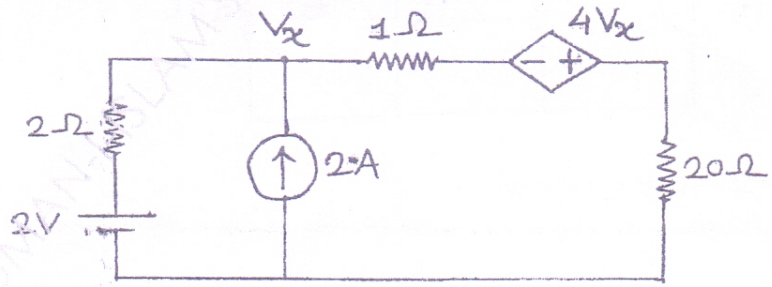
3.(a) Find the current I_2 using mesh analysis. 10



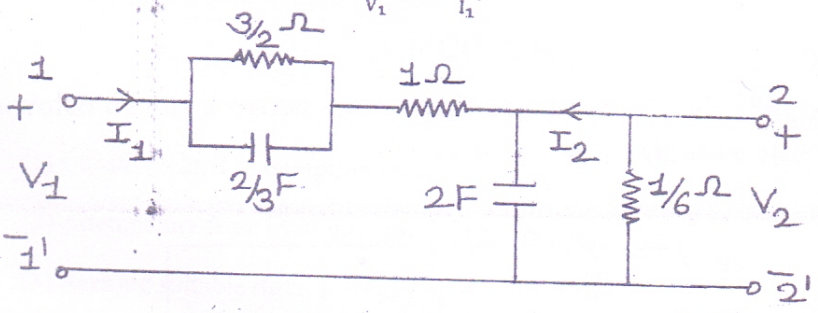
(b) Realize using Foster-I and Foster-II form. 10

$$Y(s)=\frac{s(s^2+2)(s^2+4)}{(s^2+1)(s^2+3)}$$

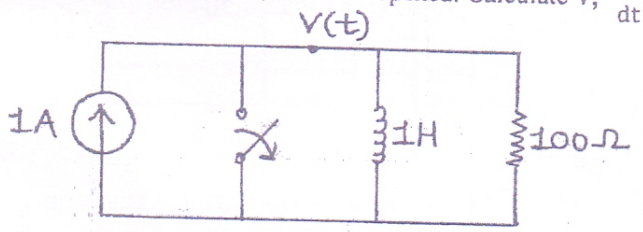
4.(a) Find the current in 20Ω resistor using Thevenin's theorem. 10



(b) For the given network, find out $\frac{V_2}{V_1}$ and $\frac{I_2}{I_1}$. 10



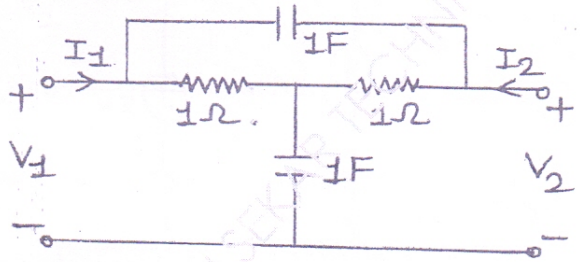
5.(a) For the given network at t = 0, switch is opened. Calculate v, $\frac{dv}{dt}$, $\frac{d^2v}{dt^2}$ at $t=0^+$. 10



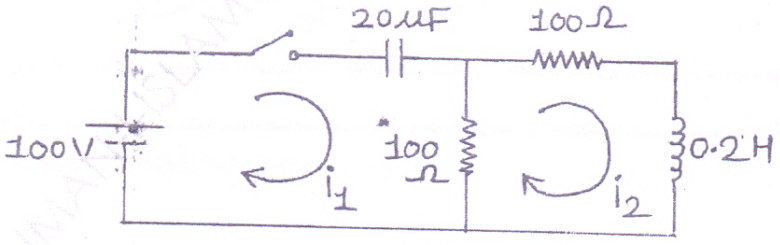
(b) Check the positive realness of the following functions: 10

(i) $\frac{(s^2+s+6)}{(s^2+s+1)}$ (ii) $\frac{(s^2+1)}{(s^3+4s)}$

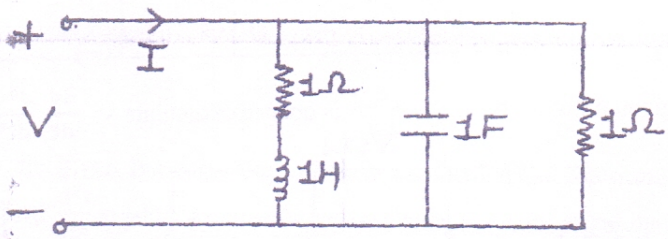
6.(a) Find y parameters for the given network. 10



(b) For the network, calculate i_1, i_2, $\frac{di_1}{dt}$, $\frac{di_2}{dt}$, $\frac{d^2i_1}{dt^2}$, $\frac{d^2i_2}{dt^2}$ at t=0+. Switch is closed at t = 0.Initially switch is open 10



7. (a) Find the driving admittance Y(s) for the network shown below and plot the pole zero diagram. 10



(b) Using Nodal method find the current though 4Ω resistor. 10