

QP Code : 28859

(OLD COURSE)

(3 Hours)

[Total Marks: 100]

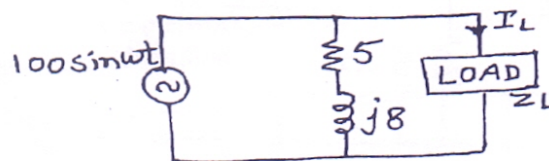
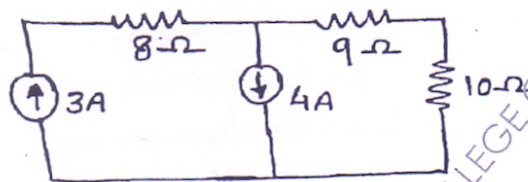
NB: 1. Question no. 1 is compulsory.

2. Attempt any four out of remaining six.

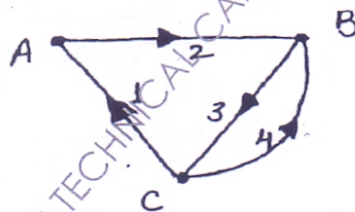
3. Assume suitable data if required.

Q.1 Attempt any four-

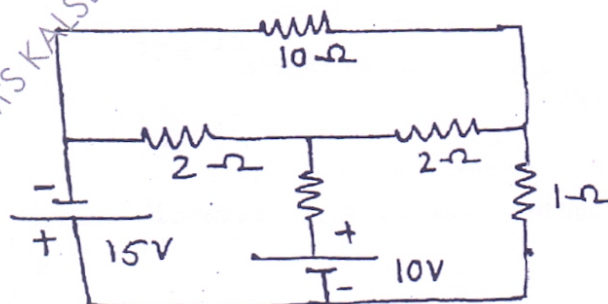
(20)

(a) Calculate current I_L (b) The Z parameters of two port networks are $Z_{11}=5\Omega$, $Z_{22}=7\Omega$, $Z_{12}=Z_{21}=3\Omega$, calculate ABCD parameters.(c) Determine current through 10Ω resistance.(d) Draw pole-zero plot for the function $F(s) = \frac{5(s+4)}{(s^2+6s+9)(s^2+64)}$

(e) How many trees are possible for the given graph.

Q.2(a) Find current through 1Ω resistor.

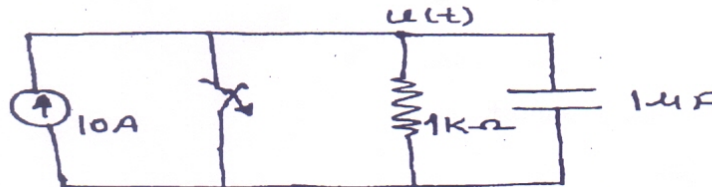
(10)



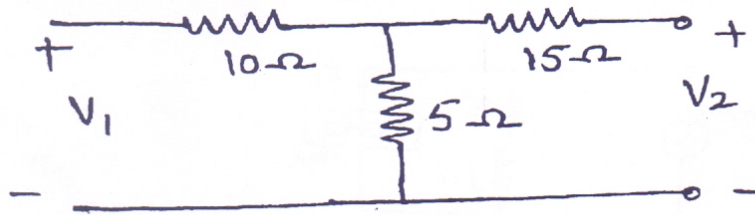
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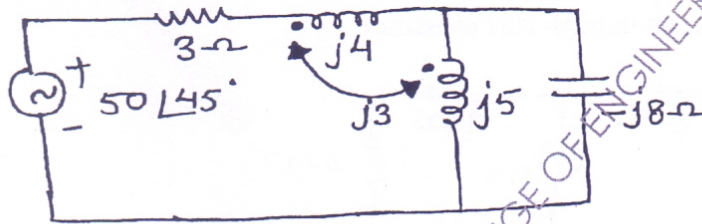
Q.2(b) In the given network switch is open at $t=0$, determine $v(t)$, $\frac{dv(t)}{dt}$, $\frac{d^2v(t)}{dt^2}$ at $t=0^+$. (10)



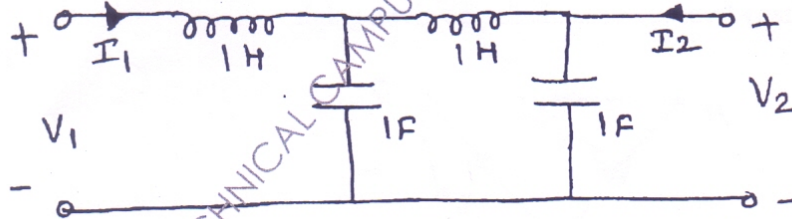
Q.3(a) Find the Y parameters of the given network. (10)



(b) Find the current through 3Ω using mesh analysis. (10)



Q.4(a) Find the network function $\frac{V_1}{I_1}$, $\frac{V_2}{I_1}$ and $\frac{V_1}{V_2}$ for the given network. (10)



(b) Check the positive realness of the following function and give reason. (05)

$$Y(s) = \frac{s^2 + 5s}{s^3 + 2s^2 + 1}$$

(c) Test whether the following polynomials are Hurwitz (05)

$$s^5 + 8s^4 + 24s^3 + 28s^2 + 23s + 1$$

$$s^3 + 2s^2 + s$$

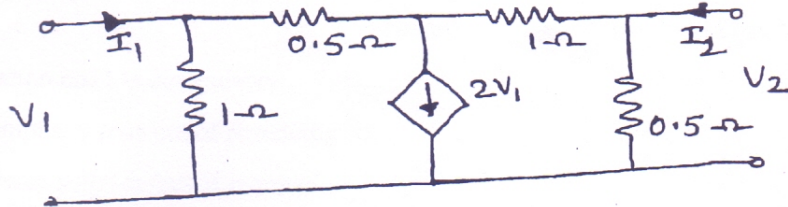
Q.5(a) Realize the driving point impedance in Foster I and Foster II (10)

$$Z(s) = \frac{3(s^2 + 1)(s^2 + 49)}{(s^2 + 9)}$$

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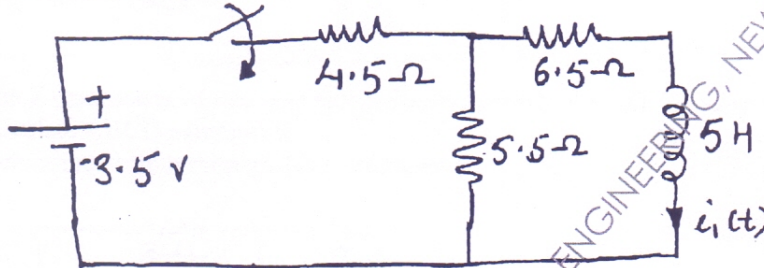
- (b) Determine Z parameters for the given network. (10)



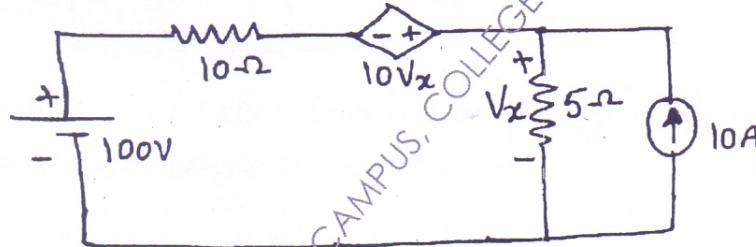
- Q.6(a) Draw the Bode plot for the given Transfer Function. (10)

$$G(S)H(S) = \frac{10(S+1)}{S(1+0.02S)(1+0.2S)}$$

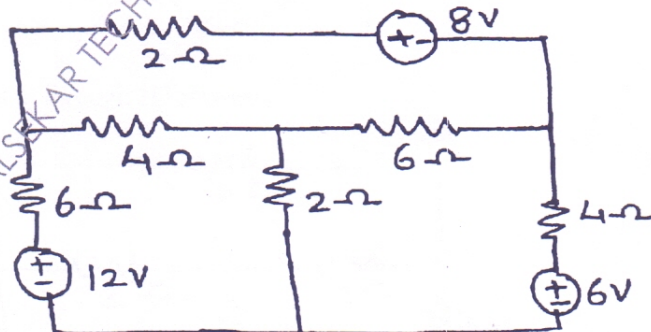
- (b) For the given network calculate $i_1(t)$ when switch S closed at $t=0$. Consider zero initial conditions. (10)



- Q.7(a) Find the current in 10 ohm resistor using Thevenin's theorem. (10)



- (b) For the given network write Tie-set matrix and obtain the network equilibrium equation in matrix form using KVL (10)



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