SE/EIX/Sem-III/CBCGS/R-19/C-scheme/ENAS/SH-24

[Time : 3 Hours] [Total Marks:80]

QP-10066757

N.B.: (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1 Attempt **Any Four.** **[20]**

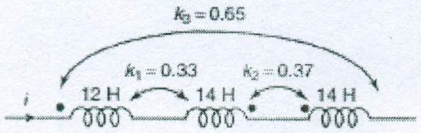
a Explain various types of filters. **[05]**

b Write the properties of a Hurwitz Polynomial **[05]**

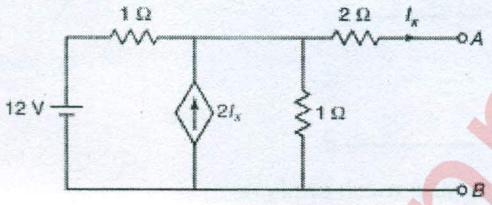
c List the type of damping in a series R-L-C Circuit and mention the condition for each damping. **[05]**

d Prove the condition of Reciprocity of H parameters **[05]**

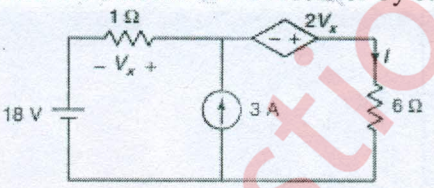
e Find the Equivalent Inductance of the network shown in figure **[05]**



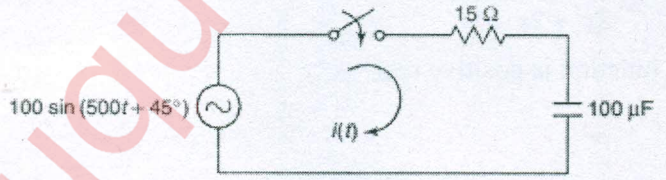
2 a Find V_{th} and R_{th} between terminals A and B **[10]**



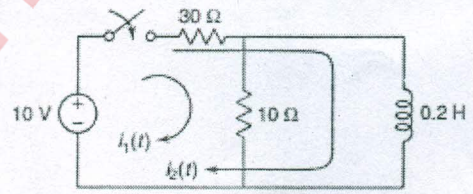
b Find the current in 6 Ω resistor by superposition theorem **[10]**



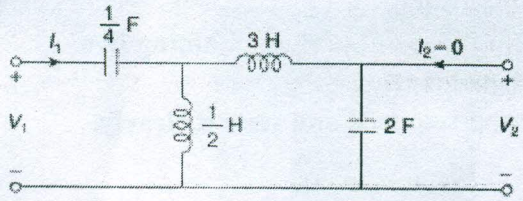
3 a In the network shown in figure a sinusoidal voltage v = 100 sin(500t + θ) volts is applied to the circuit at a time corresponding to $\theta = 45^0$, obtain the expression of i(t) **[10]**



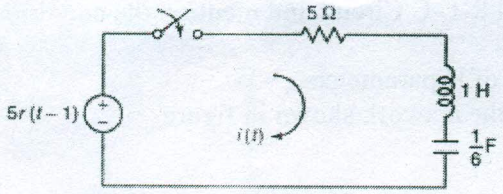
b The switch in the network is closed at t = 0,find $V_2(t)$ for all t > 0 **[10]**
Assume zero initial current in the inductor



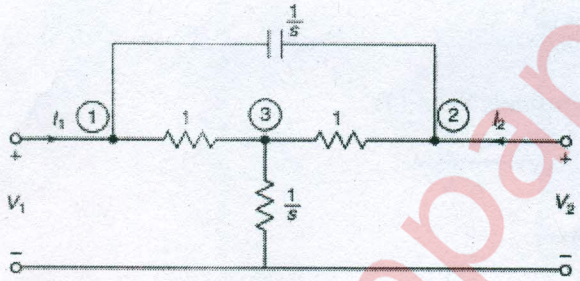
4 a For the network shown in figure Find V_1/I_1, V_2/V_1 and V_2/I_1 **[10]**



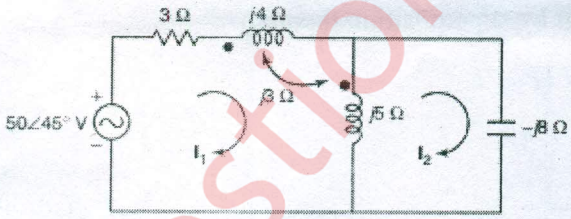
b Determine the current i(t) for the network shown in figure when the switch is closed at t = 0 **[10]**



5 a **[10]**



b Find the current through the capacitor using mesh analysis **[10]**



6 a *Realise Cauer forms of the following LC impedance function:* **[10]**

$$Z(s) = \frac{10s^4 + 12s^2 + 1}{2s^3 + 2s}$$

b Test whether the given function is positive real **[10]**

$$F(S) = \frac{S^3 + 6S^2 + 7S + 3}{S^2 + 2S + 1}$$

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