gnshu.(CBGS)

SE/Sem-III/INST/Electri. n/w Analy. & Synthesis/ 16-12-13

Ash7-D:\Data-100

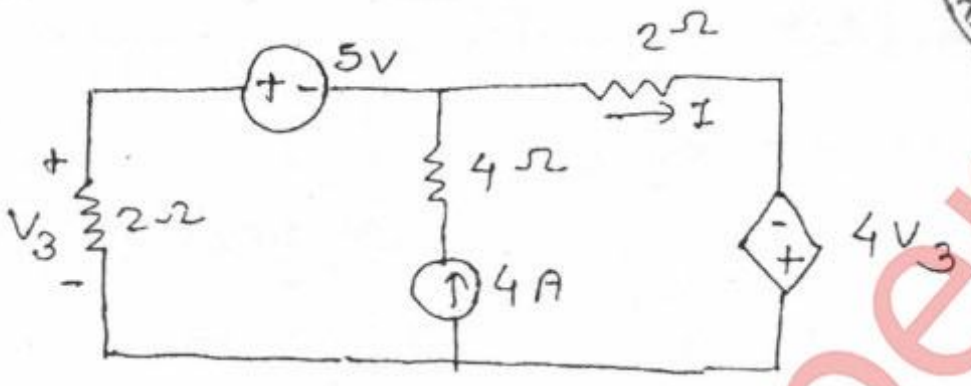
Con. 9944-13. **GX-12188**

(3 Hours) **[Total Marks : 80**

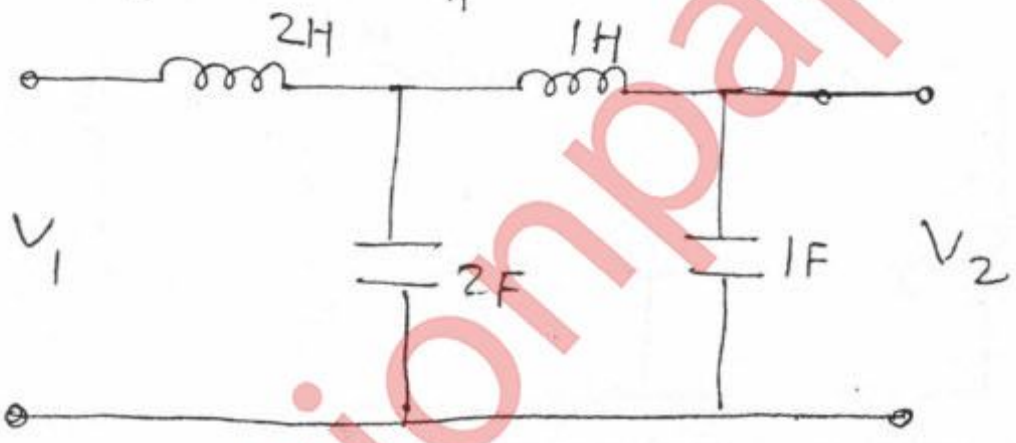
N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **three** questions from the remaining **five** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable** data, if **required.**

1. Attempt any **four** questions :– **20**

(a) Determine the current I through 2Ω resistor :–

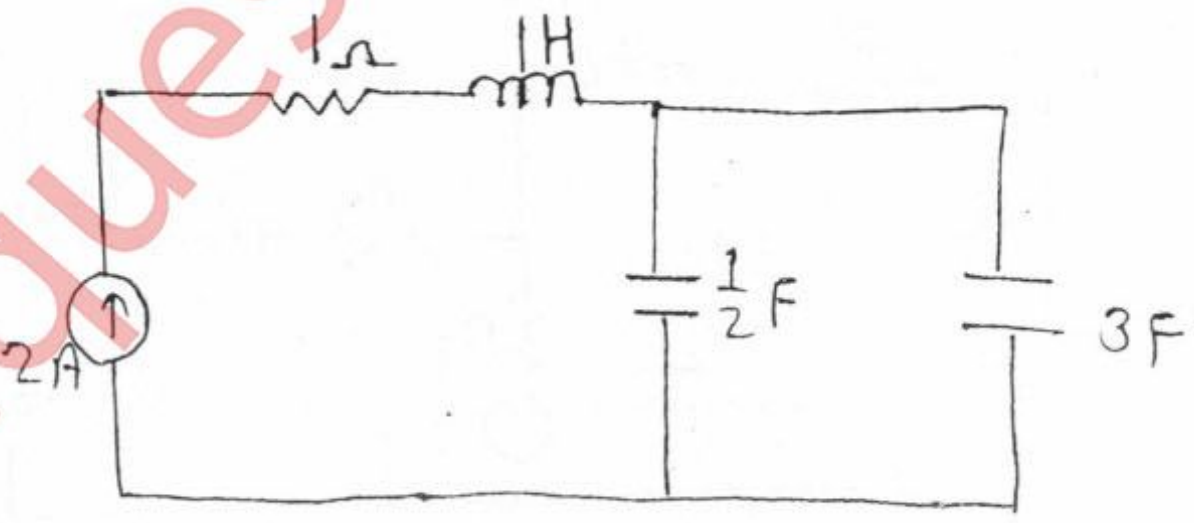


(b) For the given circuit find $\frac{V_2}{V_1}$



(c) Write all the properties of LC synthesis.

(d) Draw the dual network of the circuit shown in figure :–

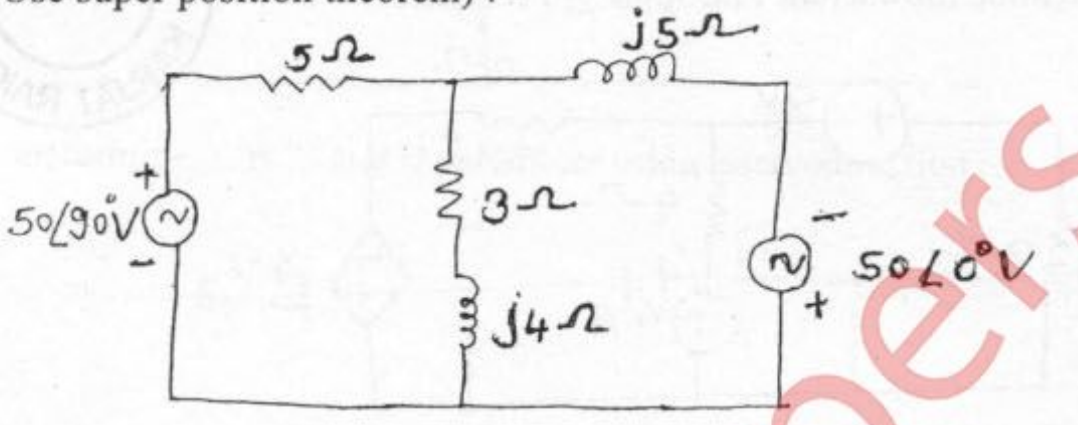


TURN OVER

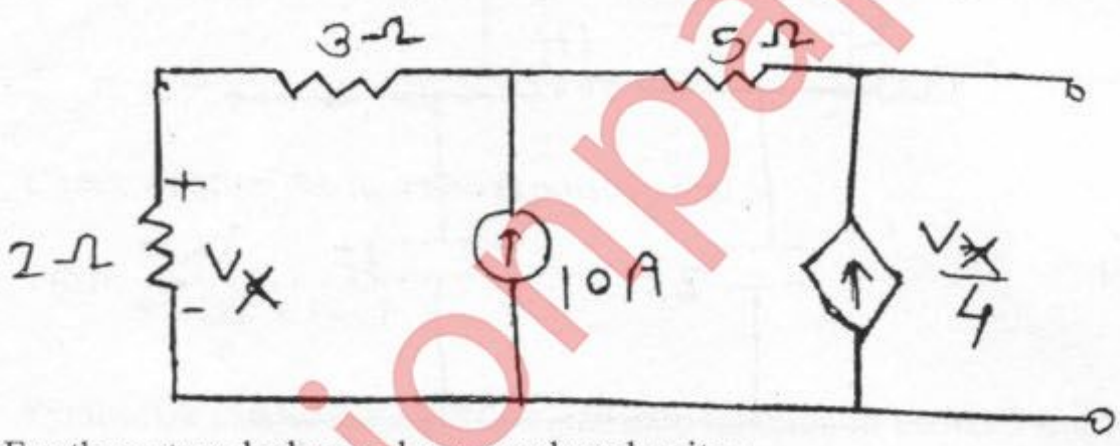
(e) Discuss the initial and steady state conditions in relationship with voltage and current for the following circuit elements :–

(i) Resistor.
(ii) Inductor.
(iii) Capacitor.

2. (a) Find the currents through $3+j4\Omega$ impedance of the network given below. (Use super position theorem) :– **10**

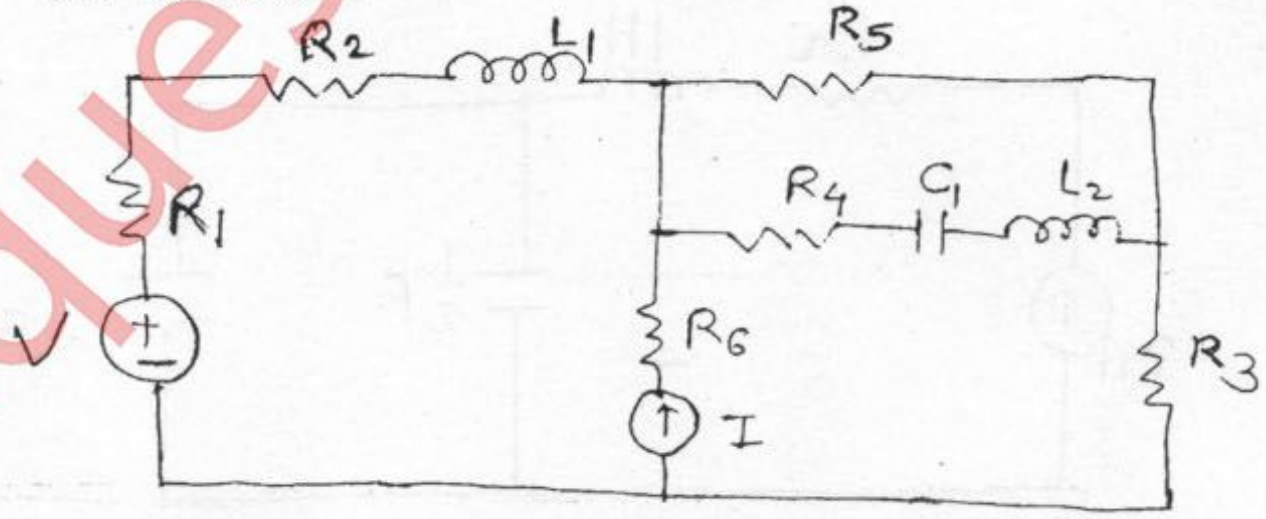


(b) Determine the venin's equivalent network for the network given below :– **10**

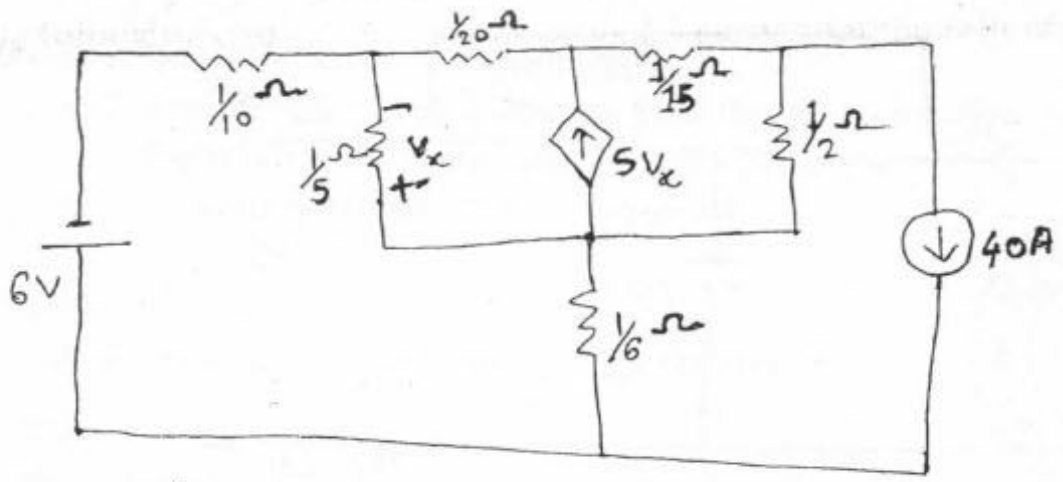


3. (a) For the network shown draw graph and write :– **10**

(i) Incidence matrix.
(ii) Cutset matrix.
(iii) Tieset matrix.



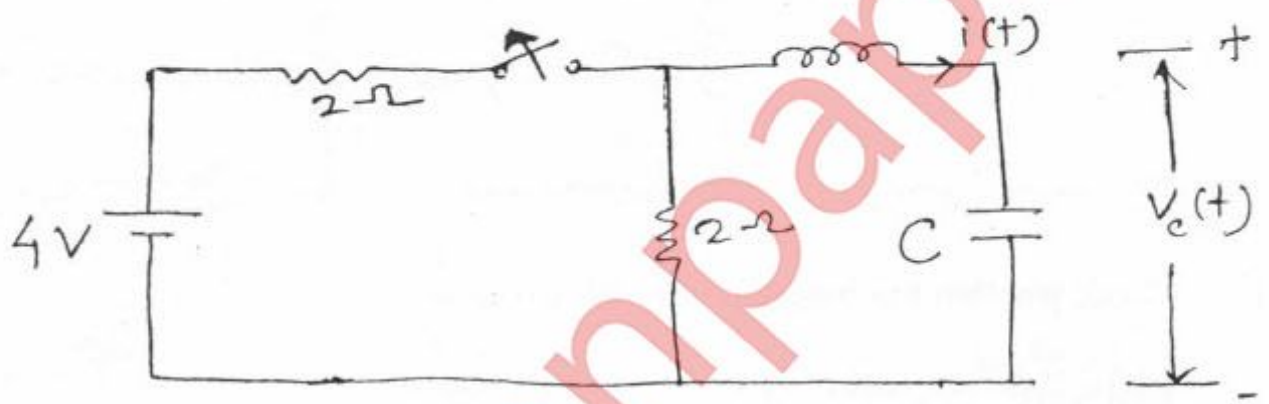
(b) Find the currents I_1, I_2, I_3 and I_4. **10**



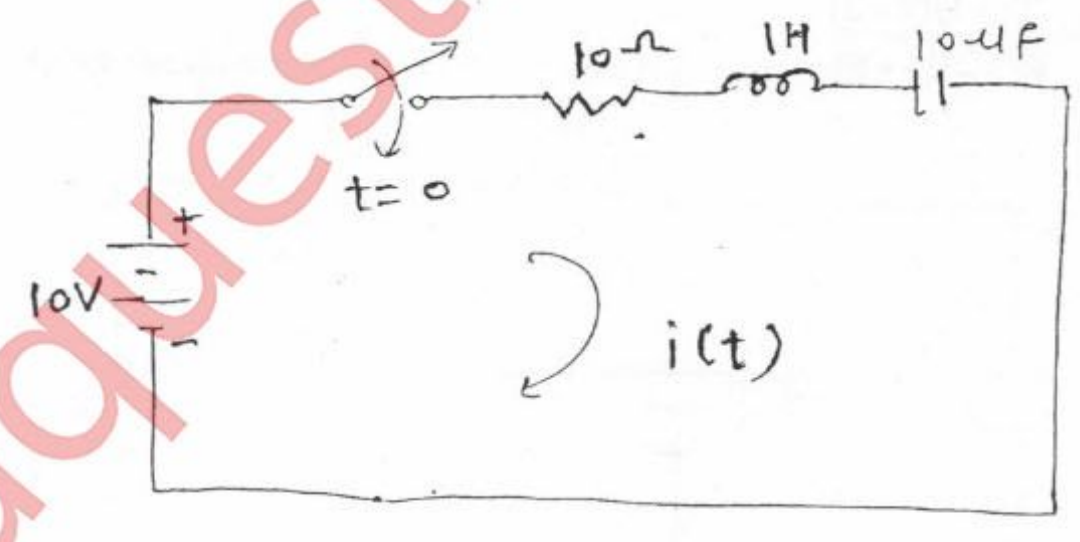
4. (a) The switch in the network is opened at t = 0. Find i(t) for t > 0 if **10**

(i) $L = \frac{1}{2}H$ and $C = 1F$

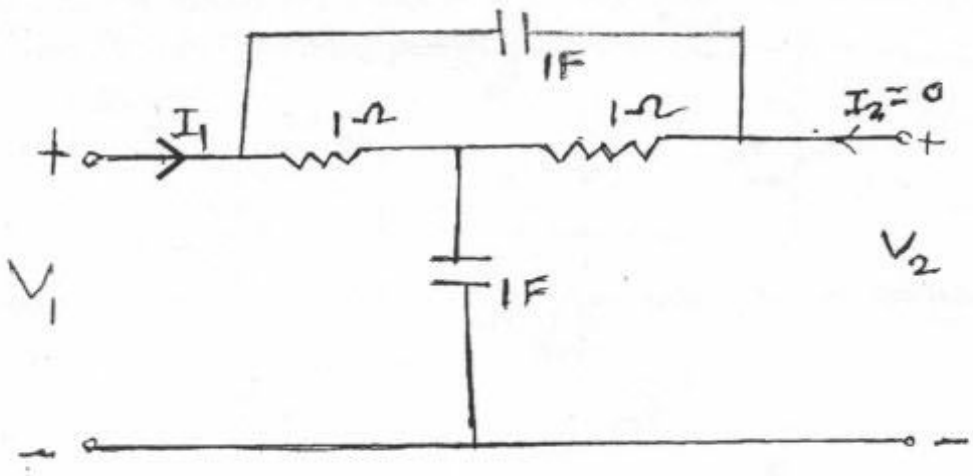
(ii) $L = 1H$ and $C = 1F$



(b) For the given network find $i(0^+)$, $\frac{di^{(0^+)}}{dt}$ $\frac{d^2i^{(0^+)}}{dt^2}$:- **10**



5. (a) In the network shown below, determine $Z_{11}(s)$, $G_{12}(s)$ and $Z_{12}(s)$. **10**



(b) Determine A, B, C and D parameter using interconnection :– **10**

6. (a) Check whether the function is positive real :– **10**

$$F(S)=\frac{S^2+4}{S^3+3S^2+3S+1}$$

(b) Synthesize the following RL impedance function in Foster I and Foster–II forms :– **10**

$$Z(S)=\frac{2(S+1)(S+3)}{(S+2)(S+6)}$$
