

communication

- k) A loop which does not contain any other loop within it ,is called
(a)independent loop (b) closed loop (c) open loop (d) mesh
- l) Steady state response is obtained from the transient response by substituting
(a) $t=0$ (b) $t = -\infty$ (c) $t = 1$ (d) $t = \infty$
- m) In an electric circuit, the dual of resistance is
(a) conductance (b) inductance (c) open circuit (d) short circuit
- n) What is an impulse Function?

Attempt any four questions from Q-2 to Q-8

- Q-2 Attempt all questions (14)**
- (a) Explain the terms (i) Linear (ii) Bilateral (iii) Passive (iv) Reciprocal (07)
(v) Time invariant (vi) Lumped parameter and (vii) Dual with reference to Network.
 - (b) Write voltage and current relationships in resistor, inductor and capacitor. (07)
Obtain these relationships in “s” domain also. State assumptions if any in obtaining the relationship.
- Q-3 Attempt all questions (14)**
- (a) Find the voltage across 6Ω resistor in the network of Fig.1 using nodal analysis. (07)
 - (b) Find the current through 4Ω resistor branch of the network given in Fig.2 using mesh analysis. (07)
- Q-4 Attempt all questions (14)**
- (a) For the graph shown in Fig.3write the incidence matrix, tie set matrix. (05)
 - (b) Explain following terms of graph in network terminology with suitable example. (05)
(i) Tree (ii) Twing (iii) Link (iv) Co-tree (v) Incidence Matrix
 - (c) State and explain Kirchoff’s Laws with a suitable example. (04)
- Q-5 Attempt all questions (14)**
- (a) State maximum power transfer theorem and obtain proof of maximum power transfer theorem. (05)
 - (b) Explain Laplace transform of step Function. (05)
 - (c) Write a short note on coefficient of coupling. (04)
- Q-6 Attempt all questions (14)**
- (a) Find the Inverse Laplace transform of given $\frac{P(s)}{Q(s)} = \frac{s-1}{s^2+3s+2}$ (05)
 - (b) Find the current in the 5Ω resistors for the circuit shown in Fig.4 using Norton’s theorem. (05)
 - (c) The Z –Parameters of a circuit are given by $\begin{bmatrix} 4 & 1 \\ 3 & 3 \end{bmatrix}$ Find the transmission parameters. (04)
- Q-7 Attempt all questions (14)**
- (a) Explain following in Brief: Ideal and Practical Energy sources. (05)
 - (b) Find the Y-Parameter for the network shown in Fig.5. (05)
 - (c) Obtain the Laplace transformation of $f(t) = 1-e^{-at}$,a being a constant. (04)
- Q-8 Attempt all questions (14)**
- (a) A series RLC circuit shown in Fig.6 with zero inductor current and zero capacitor voltage is excited by 50V dc source. Find $i(0^+)$ and $\frac{di}{dt}(0^+)$. Take $R=20\Omega$, $C=10\mu F$, $L=1H$. (07)
 - (b) In the network of Fig.7 the switch K is moved from 1 to 2 position at $t=0$, steady state having previously been attained. Find the current $i(t)$. (07)



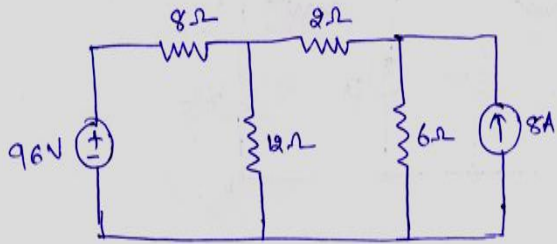


Fig. 1

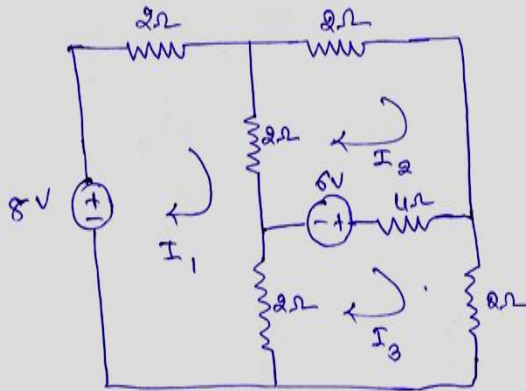


Fig. 2

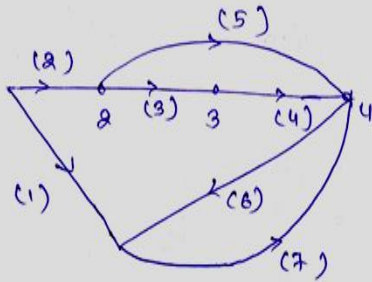


Fig. 3

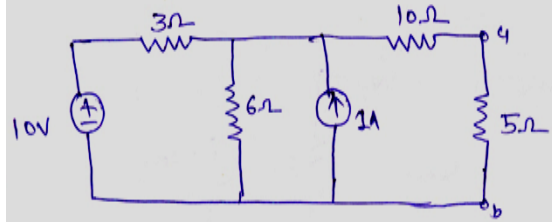


Fig. 4

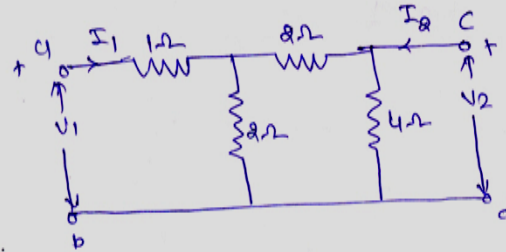


Fig. 5

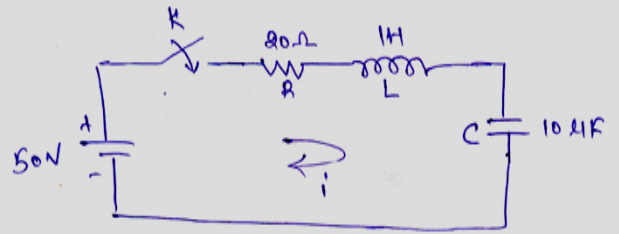


Fig. 6

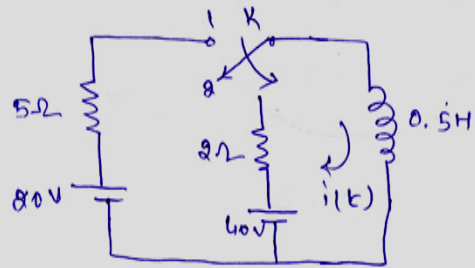


Fig. 7

