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

N.B: (1) Question No. 1 is compulsory.
(2) Attempt any three from the remaining questions.
(3) Figures to the right indicate full marks.

1. Attempt all questions.

(a) Obtain Z parameters in terms of Y parameters. (05)

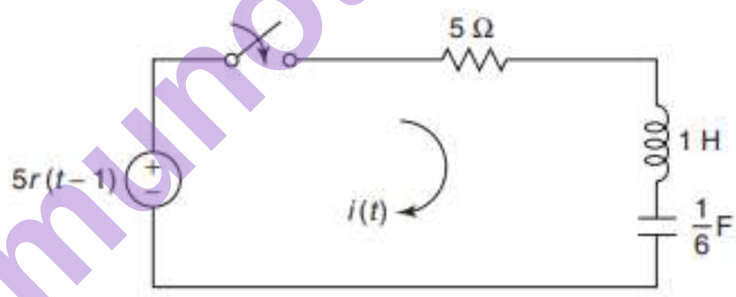
(b) Find poles and zeroes of following function and plot pole zero diagram. (05)

$$F(s) = \frac{s^2+25}{(s+1)(s^2+9)}$$

(c) Explain the condition for symmetry and reciprocity in ABCD parameters. (05)

(d) Obtain ABCD parameters in terms of h parameters. (05)

2. (A) For the network shown in figure below, determine the current i (t) when the switch is closed at t = 0 with zero initial conditions. (10)



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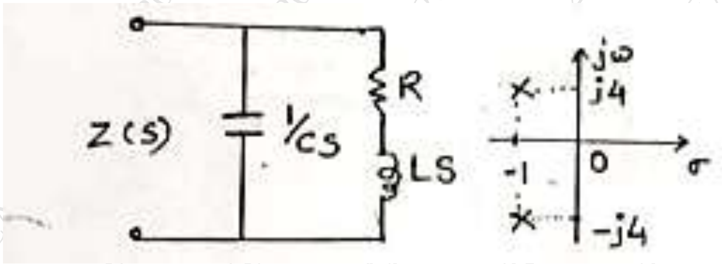
(B) Write suitable definition or expression for the following: (10)

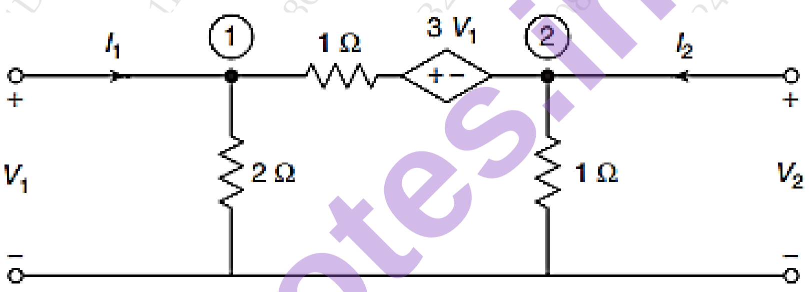
i. Transient Response ii. Steady State Response

iii. Zero Input Response iv. Zero State Response

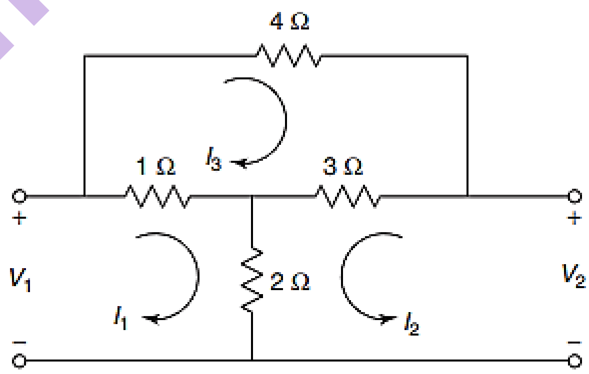
3. (A) The pole zero diagram of the driving point impedance function of the network is shown below. At dc the input resistance is resistive and equal to 2 Ω. Determine values of R, L and C. (10)



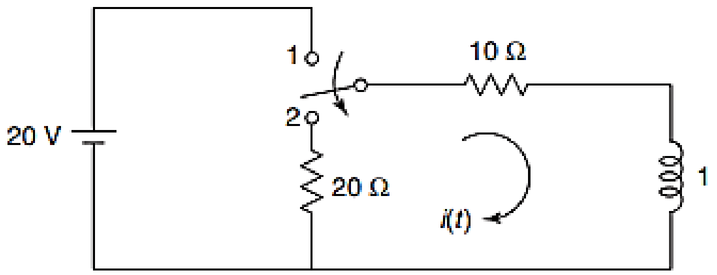
(B) Find Z and Y parameters of given two port network shown. (10)



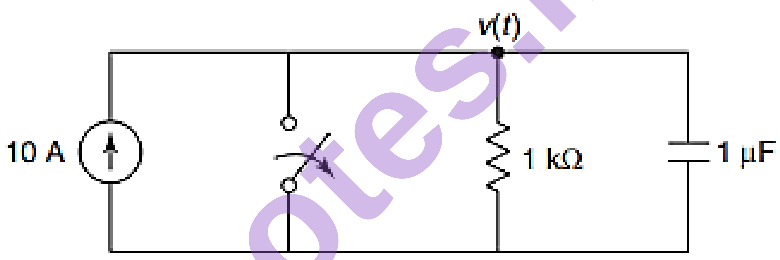
4. (A) Find Z, Y, h and ABCD parameters of given two port network shown. (10)



(B) In the network shown in figure below, the switch is changed from the position 1 to the position 2 at t = 0, steady position having reached before switching. Find the values of i, di/dt and d^2i/dt^2 at $t = 0^+$. (10)



5. (A) In the given network of figure, the switch is opened at t = 0. Solve for V, dv/dt and d^2v/dt^2 at $t = 0^+$. (10)

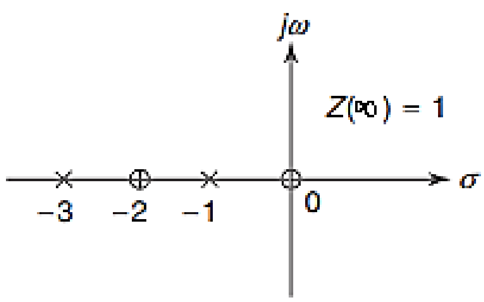


(B) The voltage V(s) of a network is given by, (10)

$$V(s) = \frac{3s}{(s+2)(s^2+2s+2)}$$

Plot its pole-zero diagram and hence obtain v(t).

6. (A) Obtain the impedance function Z(s) for which pole-zero diagram is shown in figure below: (10)



(B) Determine the voltage transfer function $\frac{V2}{V1}$ for the network shown in figure below: (10)