

Duration – 3 Hours

Total Marks - 80

- N.B.:** - (1) Question No.1 is compulsory.
 (2) **Attempt** any **Three** questions out of the remaining **five** questions.
 (3) Assume suitable data if necessary and justify the same.

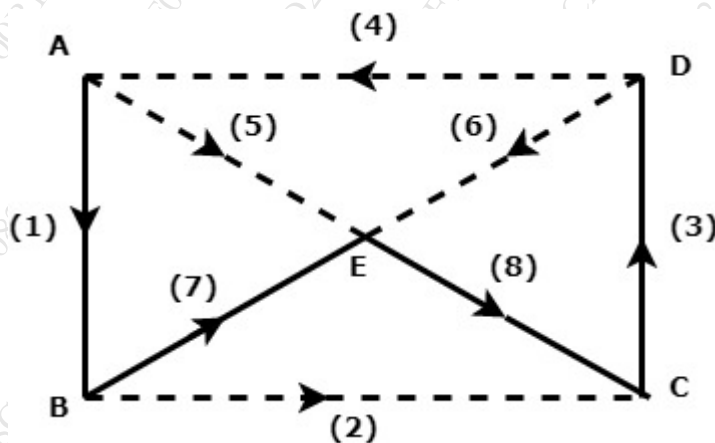
Q 1. Answer **all** questions.

- A) Define with suitable example i) Tree and Co-tree ii) Graph and Oriented graph. **05**
 B) Find poles and zeroes of following function and plot pole zero diagram. **05**

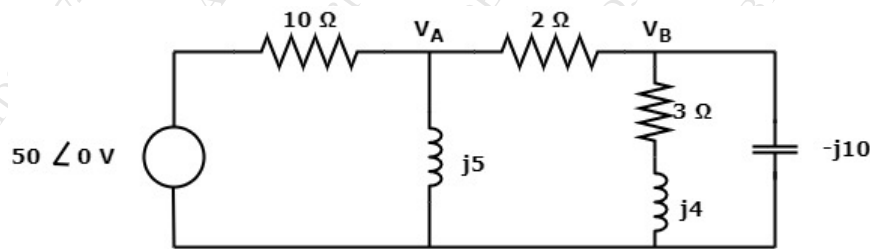
$$F(s) = \frac{s^2+4}{(s+2)(s^2+9)}$$

- C) State and explain maximum power transfer theorem **05**
 D) Obtain Y parameters in terms of Z parameters.

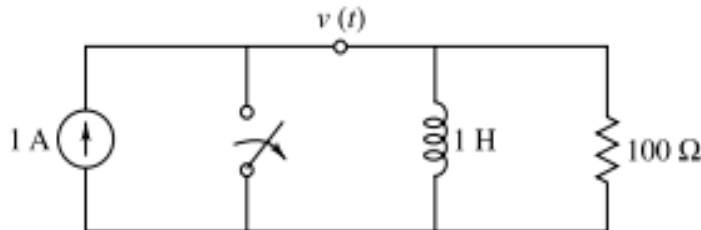
Q2a) For the graph shown below, write f-tieset and f-cutset matrix.



Q2b) Determine V_A and V_B in the network shown below. **05**

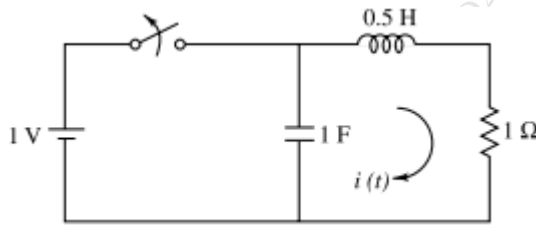


Q 3a) **10**



Find v , $\frac{dv}{dt}$, $\frac{d^2v}{dt^2}$ when switch is opened at $t=0$

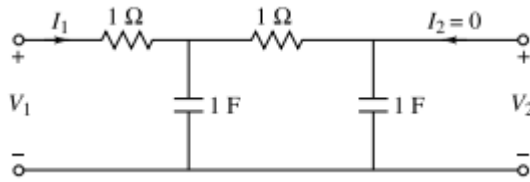
Q3 b)



Switch is opened at $t=0$, steady state condition is reached before $t=0$. Find $i(t)$ using laplace transform.

Q4 a)

For the network shown in, determine transfer function v_2/v_1

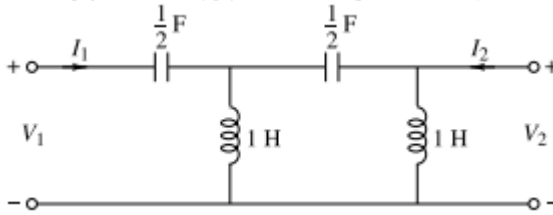


Q4 b)

Obtain h parameters in terms of ABCD parameters

Q5 a)

Determine Y-parameters for the network shown



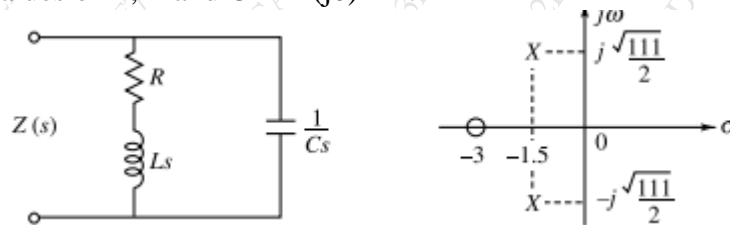
Q5 b)

Write down restrictions on Pole and Zero Locations for Driving-Point Functions and Transfer Functions.

Q 6a)

A network and its pole-zero configuration are shown in Fig. 10.53. Determine the values of R, L and C if $Z(j0) = 1$.

10



Q 6b) Calculate mesh currents in the circuit shown below.

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