



B.Tech II Year I Semester Supplementary Examinations, July 2022
NETWORK THEORY

(EEE)

Maximum Marks: 70

Date: 27.07.2022

Duration: 3 hours

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Explain self-induced e.m.f.
- 2 Explain the following terms
(i) Oriented Graph (ii) link (iii) node
- 3 Define Delta connection.
- 4 Define Phase current and line current of star connected system.
- 5 Write initial conditions for the inductor?
- 6 Explain initial conditions for resistor
- 7 Define driving point functions
- 8 Define current transfer function and transfer impedance function
- 9 Define band pass filter and band elimination filter
- 10 Define high pass filter

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 (a). Two coupled coils with $L_1= 0.01$ H, $L_2= 0.02$ H and $K= 0.4$ are connected in four different ways . Find effective inductance with (i) series aiding (ii) series opposing (iii) parallel aiding (iv) parallel opposing. [5]
(b) Explain about series magnetic circuit. [5]

OR

- 12 (a) Explain about procedure for formation of a fundamental Tie- set matrix. [5]
(b) Explain duality network and Find the duality network as shown in Fig. [5]

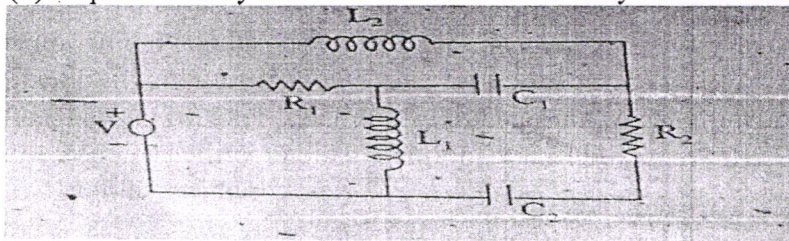


Fig. Network

- 13 Derive the equation for the voltage and current in balanced delta connected system. [10]

OR

- 14 Three coils each with a resistance of 10Ω and reactance of 10Ω are connected in star across a three phase , 50 Hz, 400 V supply. Calculate (i) line current (ii) readings of wattmeter (W_1 and W_2) [10]
- 15 In the given RL circuit as shown in Fig. the switch is closed at $t=0$. Assume all initial conditions

to be zero, find value for i , di/dt and d^2i/dt^2 at $t=0$. [10]

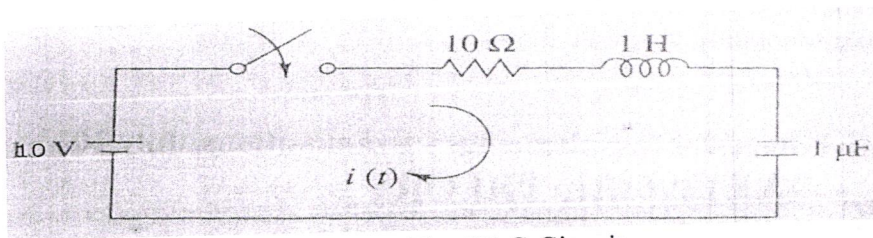


Fig. RLC Circuit

OR

- 16 In the given RC circuit as shown in fig. Find the expression for the current ($i(t)$), voltage across resistor (V_R) and voltage across capacitor (V_C) [10]

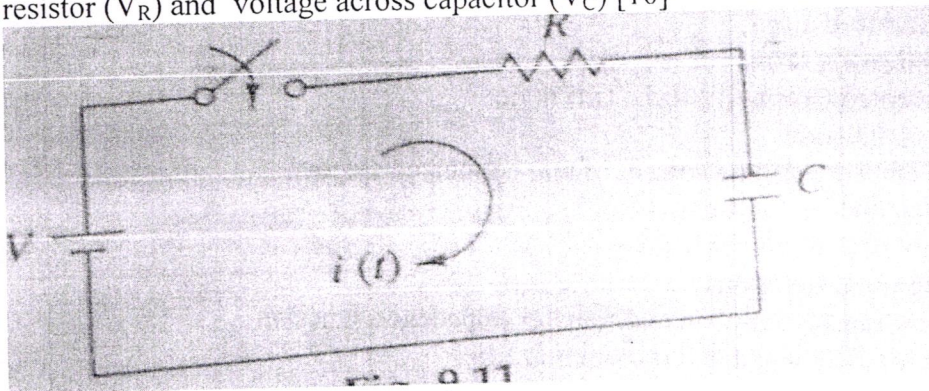


Fig. RC Circuit

- 17 Determine the interrelationship between ABCD parameters and Z parameters. [10]

OR

- 18 In the given network as shown in Fig. Find Y – parameters. [10]

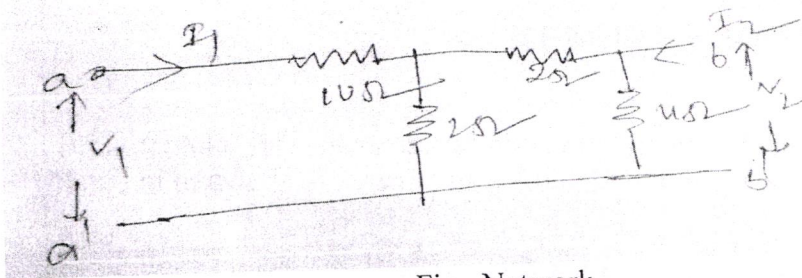


Fig. Network

- 19 Design a m- derived high pass filter. [10]

OR

- 20 Design a constant K – low pass filter. [10]