

B. TECH.

**THEORY EXAMINATION (SEM-IV) 2016-17
NETWORK ANALYSIS AND SYNTHESIS**

Time : 3 Hours

Max. Marks : 100

Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.

SECTION – A

1. Attempt all of the following questions:

10 x 2 = 20

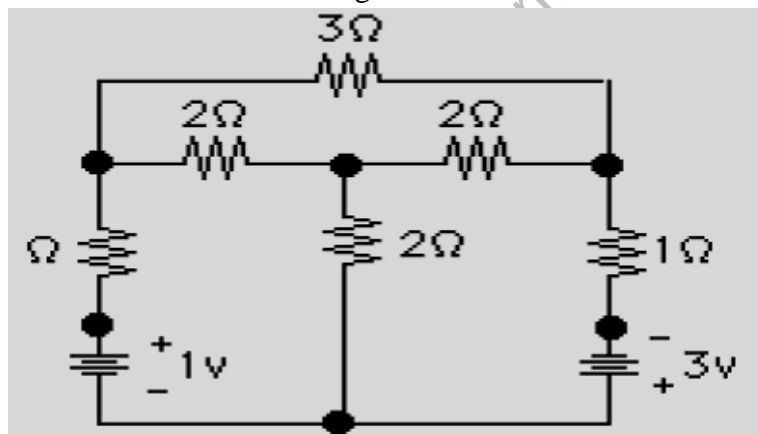
- Define a two port network.
- Define network synthesis.
- What do you mean by transfer function?
- Define twig and link.
- Write a definition of convolution.
- How you can say that a network is stable .Give definition.
- What do you mean by filters?
- Give statement of superposition theorem.
- Write down all the properties of loop impedance matrix.
- Define tree in graph theory.

SECTION – B

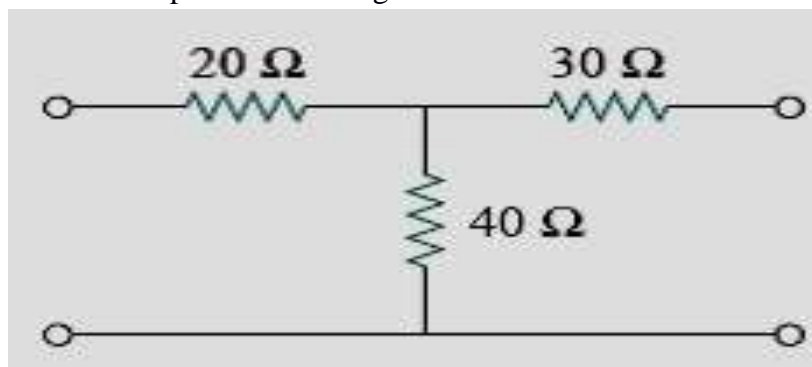
2. Attempt any five of the following questions:

5 x 10 = 50

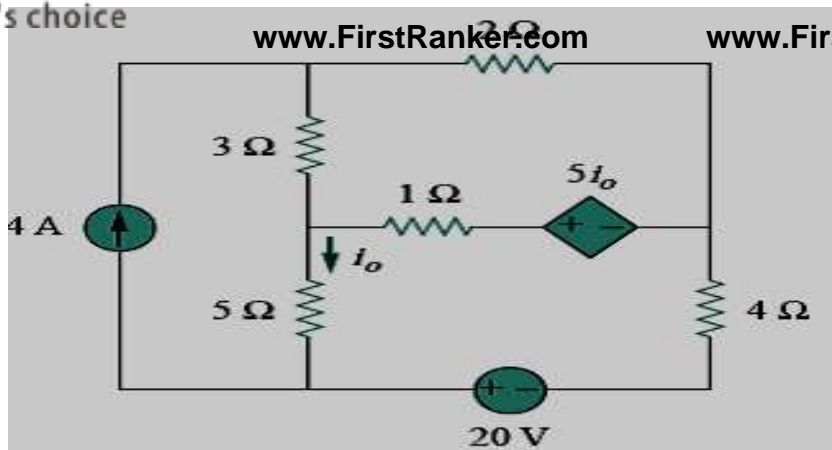
- Explain Z-impedance parameter in detail.
- Give classification of filters.
- Obtain cut-set matrix for following electrical network.



- Determine the z-parameters of fig.



- Find i_o in the circuit in Fig. using superposition theorem.



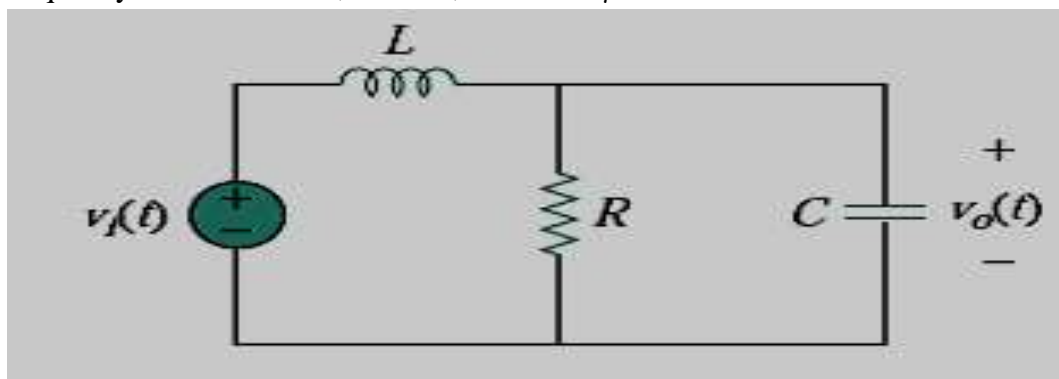
- (f) Explain admittance parameters in detail
- (g) Explain in detail band stop filter, with prove.
- (h) Give statement and prove maximum power transfer theorem.

SECTION – C

Attempt any two of the following questions:

2 x 15 = 30

- 3 With example explain first Foster form realization of LC networks.
- 4 Determine what type of filter is shown in Fig. 14.39. Calculate the corner or cutoff frequency. Take $R = 2 \text{ k}\Omega$, $L = 2 \text{ H}$, and $C = 2 \mu\text{F}$.



- 5 Obtain Cauer form realization of following and obtain network.

$$Z(s) = \frac{(s+1)}{s(s+2)}$$

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