

## 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

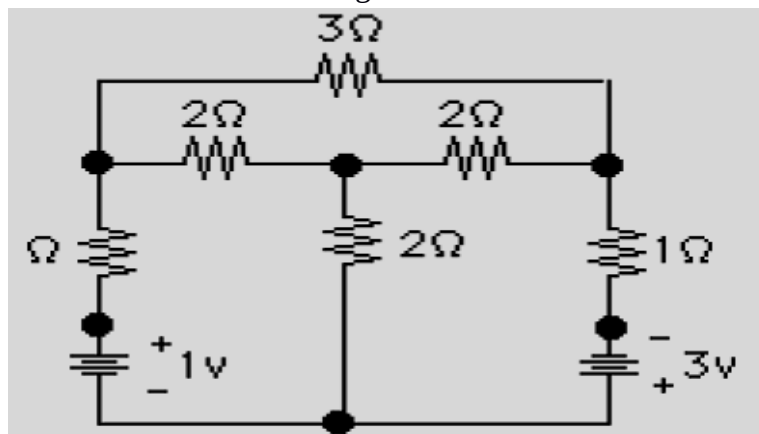
- (a) Define a two port network.
- (b) Define network synthesis.
- (c) What do you mean by transfer function?
- (d) Define twig and link.
- (e) Write a definition of convolution.
- (f) How you can say that a network is stable .Give definition.
- (g) What do you mean by filters?
- (h) Give statement of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

## SECTION – B

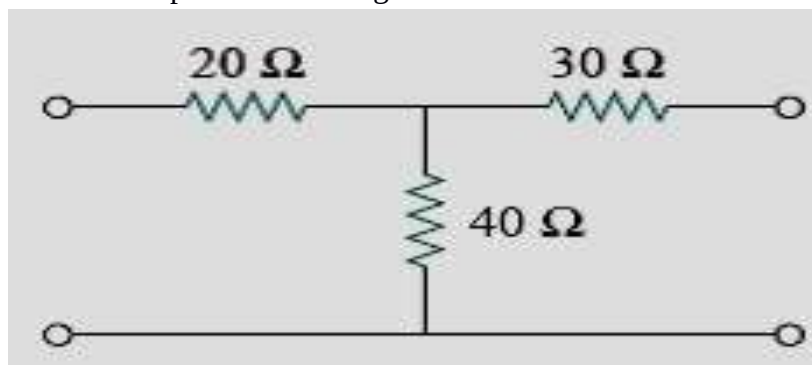
2. Attempt any five of the following questions:

5 x 10 = 50

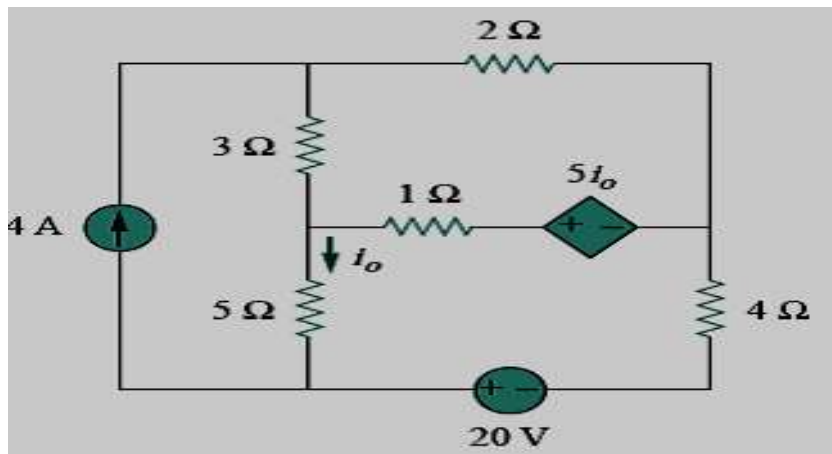
- (a) Explain Z-impedance parameter in detail.
- (b) Give classification of filters.
- (c) Obtain cut-set matrix for following electrical network.



- (d) Determine the z-parameters of fig.



- (e) Find  $i_o$  in the circuit in Fig. using superposition theorem.



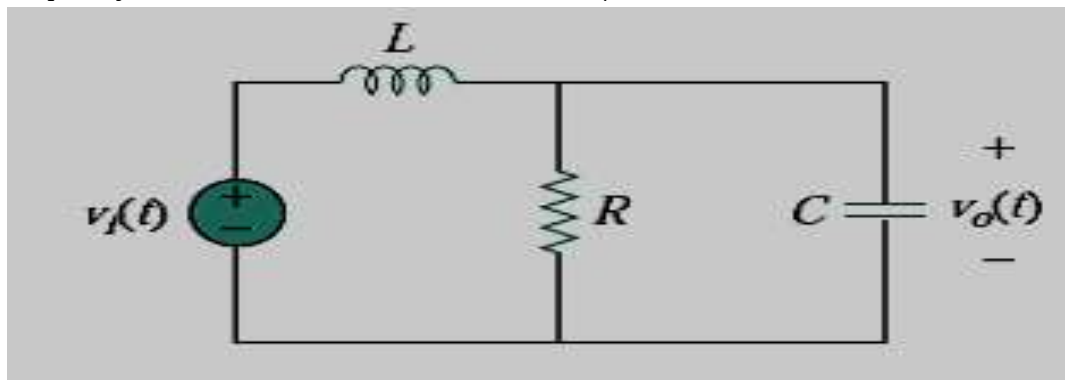
- (f) Explain admittance parameters in detail
- (g) Explain in detail band stop filter, with prove.
- (h) Give statement and prove maximum power transfer theorem.

### 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.

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

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