B. TECH. THEORY EXAMINATION (SEM–IV) 2016-17 NETWORK ANALYSIS AND SYNTHESIS

Time : 3 Hours

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:

- (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.

Roll No.

- (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:

- (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 *io* in the circuit in Fig. using superposition theorem.

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 $10 \ge 2 = 20$

Max. Marks: 100

5 x 10 = 50



- (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:

- **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 k&, L = 2 H, and $C = 2 \mu$ F.



5 Obtain Cauer form realization of following and obtain network.

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

 $2 \ge 15 = 30$