No. of Printed Pages : 3

BIEE-014

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

00553

Term-End Examination

June, 2018

BIEE-014 : NETWORK THEORY

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions in all. All questions carry equal marks. Assume missing data suitably. Use of scientific calculator is allowed.*

1. (a) Define a linear graph. 2

(b) Define the following terminologies used in a network graph with suitable examples : $4 \times 3 = 12$

(i) Rank of a graph

(ii) Subgraph

(iii) Path

(iv) Co-tree

2. (a) Define incidence matrix in a graph. Also write down the properties of a tree in a graph. 7

(b) State the Norton's theorem. Also derive the expression for Norton current (I_N) for a two-port network. 7

3. (a) Define Reciprocity theorem and prove the theorem for suitable network. 7

(b) Find the value of R_L in Figure 1 that results in maximum power transfer and find the maximum power delivered to load. 7

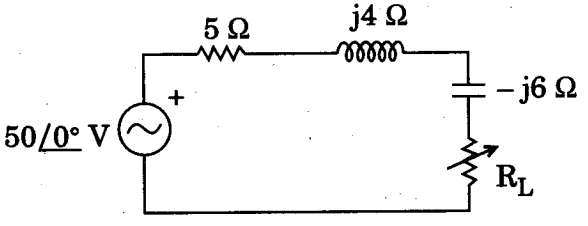

Figure 1

4. (a) State the necessary conditions for driving point function. 7

(b) Discuss the properties of transfer function. Also state the necessary conditions for transfer function. 7

5. (a) Define the following terms : 7

(i) Active and Passive Network

(ii) Unilateral and Bilateral Circuits

(b) For a two-port network, derive the Y-parameter. 7

6. (a) Derive the condition of reciprocity and symmetry in ABCD parameters. 7

(b) A CE transistor equivalent circuit has been shown in Figure 2. Find the n-parameters. 7

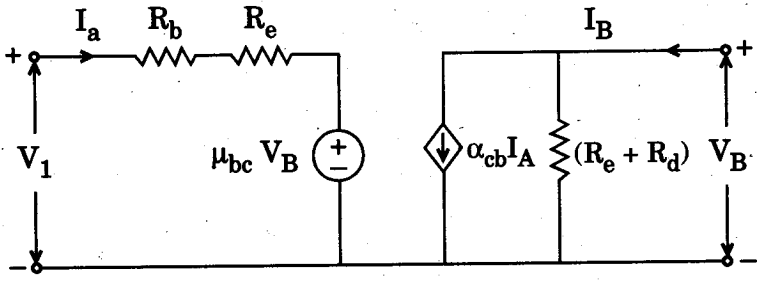

Figure 2

7. Explain in detail any ***two*** of the following : *2×7=14*

(a) Concept of stability of a system from pole-zero plot

(b) Active and Passive filters

(c) Properties of expressions of driving point immittances of LC network.
