End Semester Examination

Subject:Network Theory

Class: SY B.Tech **Max. Marks:50**

Marking Scheme

Q.1 Any five questions are to be considered .

a. Write the incidence matrix and express branch voltages in terms of node voltages. **2 marks**

b. The fundamental cutset matrix . Express branch voltages in terms of twig voltages. **2 marks**

c. The fundamental cutset matrix. Draw the oriented graph. **2 marks**

d. Draw the oriented graph. **2 marks**

e. Explain tieset. **2 marks**

f. Formula and explanation of possible trees of a graph. **2 marks**

g. Draw oriented graph. **2 marks**

h. Write tieset matrix. **2 marks**

Q. 2 a. Thevenin's Voltage and resistance $V_{TH} = 93.5V, R_{TH} = 22.75\Omega$ **2 marks**

Current Through 24 ohm resistor $I_{24\Omega} = 2A$ **2 marks**

b. Norton's equivalent resistance $R_N = 0.95\Omega$ **2 marks**

Current Through 10 ohm resistor $I_{10\Omega} = 0.43A$ **2 marks**

Q. 3. a. Write a short note on series resonant circuits and bandwidth **2marks**

parallel resonant circuits and bandwidth. **2marks**

b. Classification **1 mark**

Definition of types of filters. **3 marks**

Q. 4 a. Open-circuit impedance parameters. $Z_{11} = \frac{23}{8}, Z_{12} = Z_{21} = \frac{19}{8}, Z_{22} = \frac{31}{8}$ **2 marks**

Symmetry and reciprocity. Reciprocal N/w. **2 marks**

b. Value of load impedance Z_L $Z_L = 2.64 - j0.72\Omega$ **2 marks**

Find maximum power. $P_{max} = 197.07$ watts **2 marks**

Q.5 a. Find Y-parameters. $Y_{11} = 1/4, Y_{12} = -7/4, Y_{21} = -1/4, Y_{22} = \frac{-5}{4}$ **4 marks**

b. What are ABCD parameters **2 marks**

Condition for symmetry and reciprocity $A = D$ & $AD - BC = 1$ **2 marks**

Q. 6 a. T –type attenuator with diagram **2 marks**

π – type attenuator with diagram **2 marks**

b. Full series equalizer **2 marks**

Full shunt equalizer. **2 marks**