PVP 14

Code: EC3T4

II B.Tech - I Semester – Regular/Supplementary Examinations
November - 2018

NETWORK ANALYSIS AND SYNTHESIS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11x 2 = 22 M

1.

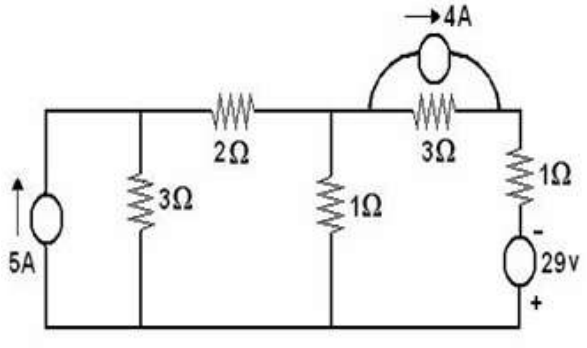
a) State Superposition Theorem. Explain.
b) What is significance of Maximum power transfer Theorem?
c) State Millman's Theorem.
d) Define Incidence matrix and Cutset matrix.
e) What is time constant of series RL circuit? Explain its significance.
f) What are Z-parameters?
g) What is relation between Z and Y parameters?
h) What is significance of poles and zeros?
i) Define Transfer function and state its importance.
j) Mention the two properties of Positive Real function.
k) What is the difference between network analysis and synthesis?

PART – B

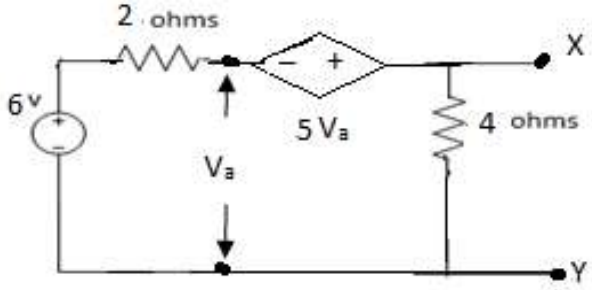
Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

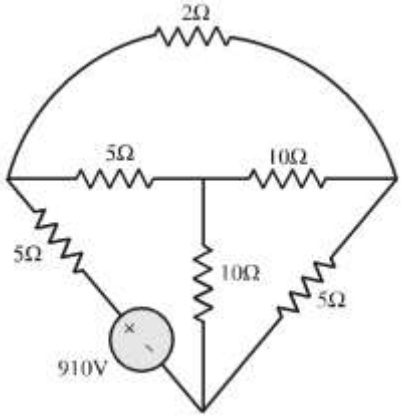
2. a) Determine the current in the 2Ω resistor for the circuit shown below, by using nodal analysis. 8 M



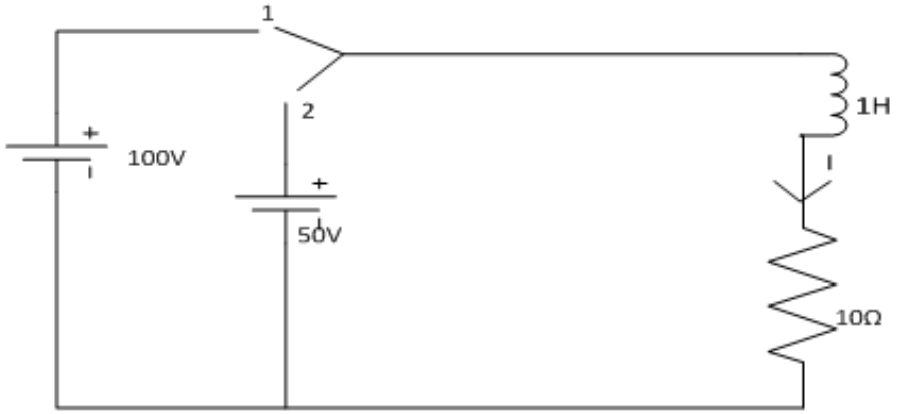
b) Find Thevinen's equivalent of the network shown below at X-Y terminals. 8 M



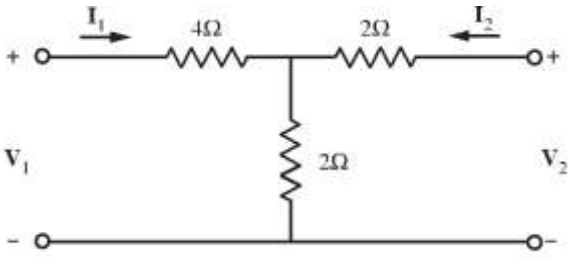
3. a) Find the power dissipated by 2Ω resistor by constructing tie-set and cut-set matrices. 8 M



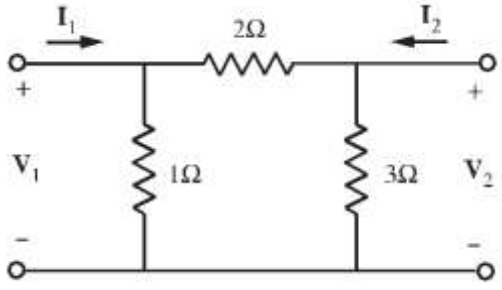
b) The switch is in position 1 for long time and moved to position 2 at t= 0, find current i. 8 M



4. a) Find the h and ABCD parameters of the two-port network shown below. 10 M



b) Find the y-parameters of the two-port network shown below. 6 M



5. a) What are necessary conditions for a driving point function? 6 M

b) Draw the pole zero diagram for the given function $\boldsymbol{V(s) = \frac{4(s+2)s}{(s+1)(s+3)}}$ and hence obtain V(t). 10 M

6. a) A driving point function is given by F(S) = $\frac{S^2 + 6S + 8}{S^2 + 4S + 3}$.

Show that the function can be realized in both RC & RL forms. 10 M

b) For the driving point function $\frac{(S + 2)(S + 1)}{S(S + 3)}$. Design a network by choosing the elements on your own. 6 M