Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Winter 2019 - 20 Examination

Semester: 3 **Date: 29/11/2019**
Subject Code: 203106205/03106203 **Time: 2:00pm to 4:30pm**
Subject Name: Electrical Circuit Analysis **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Objective Type Questions** - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark) **(15)**

1. Write an equation of I_{TH}.
2. Draw the V-I characteristic for Ideal Voltage source.
3. Super position theorem is applicable to _____ network.
4. The inductors act as an _____ circuit at time $t = 0+$.
5. Write an equation of I_L in Norton Theorem.
6. Transfer Function is _____ Transform of Output and Input Quantity.
7. Define: Poles and Zeros of network transfer function.
8. Define: Driving point impedance.
9. What is the condition for symmetrical network for z-parameters?
10. What is the condition for reciprocal network for h-parameters?
11. Define: Oriented Graph.
12. What is Tree and Co-tree?
13. Define: Tie-set.
14. Define: Incidence matrix.
15. Define: Cutset and Cutset Matrix.

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Find the current passing through the 2 Ohm resistor using Mesh analysis for the circuit shown in the following figure 1.

B) Explain Duality and draw a Dual Network of given Figure 2.

C) State Millman's theorem. Obtain the equivalent of a parallel connection of three branches each with a voltage source and a series resistance, (2V, 1 Ohm), (3V, 2 Ohm) and (5V, 2 Ohm).

D) Determine the node voltages V1 and V2 in the network shown in Figure-3 by applying the superposition theorem.

Q.3 A) Explain Relation Between Hybrid Parameter and ABCD Parameter. **(07)**

B) Obtain Hybrid Parameter for given network shown in Figure-4. **(08)**

OR

B) Explain Relation Between g Parameter and Y Parameter **(08)**

Q.4 A) Explain Transient R-L and Transient R-C Circuit. **(07)**

OR

A) Explain Supermesh and Supernode in detail. **(07)**

B) Obtain Incidence Matrix, Loop Matrix and Cutset Matrix for given Figure-5. **(08)**

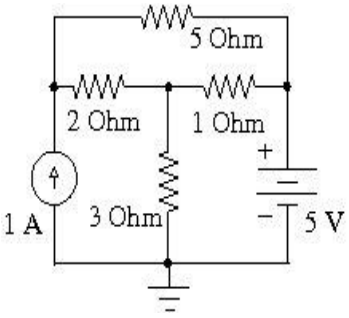

Figure-1

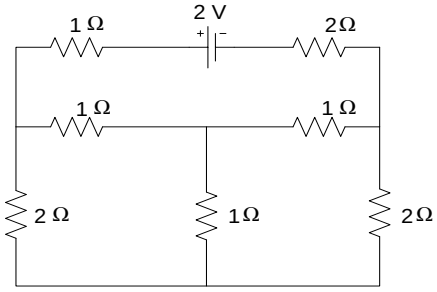

Figure-2

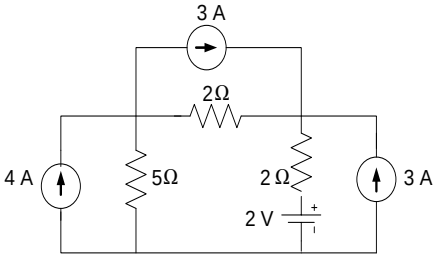

Figure-3

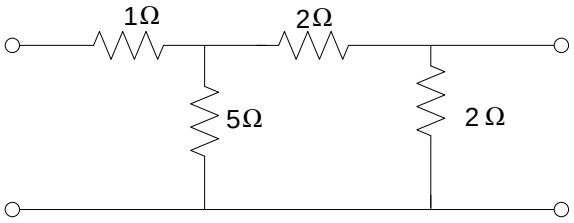

Figure-4

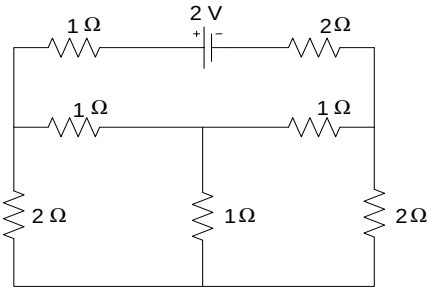

Figure-5