Seat No.: _____

Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: X 20901	Date: 16/01/2013
Subject Name: Circuit and Network	
Time: 10.30 am - 01.00 pm Total Marks	
Instructions:	
1. Attempt all questions.	

- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1(a) Explain Dot convention with suitable Example.
- Q.1(b) Derive the inter-relationship between incidence matrix, Tie-set matrix and 06 cut-set matrix.
- Q.1(c) Give the difference between mesh and node.
- Q.2(a) Find the current through branch AB in this figure given below by Thevenin's 06 theorem.



Q.2(b) Derive the equivalent circuit with voltage source in series with resistance by 06 using source transformation technique.



- O.2(c) State Millman's theorem.
- Q.3(a) Find all mesh currents by using mesh analysis method.

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Q.3(b)	Explain the concept of Super-mesh and Super-node with one suitable	06
	example for each.	
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- Write the property of laplace transform. Q.3(c) 03 09
- Q.4(a) Explain and obtain the Laplace transform of the following: 1) Unit impulse 2) Unit step and 3) Unit ramp function
- Explain the concept of complex frequency. Q.4(b) 05
- Find the current through 2 ohm resistance by Norton's theorem. 05 Q.5(a)



- Q.5(b) Draw the graph, tree and co-tree for the figure given in above question. 05 04
- Draw the dual network of above given network. Q.5(c)
- Derive the symmetry and reciprocity condition for transmission parameter O.6(a) 10
- Give the application of h-parameter and also state the relation between h-Q.6(b) 04 parameter with transmission parameter.
- Q.7(a) In the given figure below switch K is opened at t = 0. Find the v, dv/dt and 05 d^2v/dt^2 at t =0+.



- Q.7(b) What is network function? Define the terms "Driving point impedance" and 05 "driving point admittance" of a one port network.
- Derive the condition for a maximum power transfer Q.7(c)
 - a) When load consist of a variable resistance
 - b) When load consist of a variable resistance and variable reactance *******

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