Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: X40903 **Date: 07-12-2013**

Subject Name: Power System Analysis and Simulation

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Prove that AD-BC = 1 for transmission line.	**07**
	(b)	Develop the equations for transmission line. $V_s = V_r \cosh yl + I_r Z_c \sinh yl$ $I_s = V_r (\sinh yl / Z_c) + I_r \cosh yl$	**07**
Q.2	**(a)**	Give details about propagation constant r and surge impedance for transmission line.	**07**
	(b)	Define and explain : **1.** Skin effect. **2.** Farranti effect.	**07**
		OR	
	(b)	State benefits of Neutral grounding. Explain resistance grounding with suitable diagram.	**07**
Q.3	**(a)**	Derive expression of ABCD parameters for medium transmission line using T method.	**07**
	(b)	Explain briefly auto transformer.	**07**
		OR	
Q.3	**(a)**	What is reactive power compensation of transmission line? Explain briefly.	**07**
	(b)	Explain bus impedance matrix method.	**07**
Q.4	**(a)**	What is Corona? Explain methods for reducing corona effect. Also state its advantages and disadvantages of corona.	**07**
	(b)	Give factors affecting Corona in detail.	**07**
		OR	
Q.4	**(a)**	Compute following in polar form (1) α^2-1 (2) 1-α- α^2 (3) 3 α^2+4α+2 (4) jX	**07**
	(b)	Explain open conductor faults with neat diagram.	**07**
Q.5	**(a)**	Explain zero sequence networks of transformers.	**07**
	(b)	A single phase resistive load of 100 KVA is connected across line BC of a balance supply of 3 KV. Compute the symmetrical components of the line currents.	**07**
		OR	
Q.5	**(a)**	State gains of per unit system.	**07**
	(b)	Enlighten detail about over voltages due to Arcing ground.	**07**

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