Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: X40903 **Date: 10-06-2013**

Subject Name: Power System Analysis and Simulation

Time: 10.30 am - 01.00 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)**	Classify the over head transmission lines. Derive equations of sending end voltage and current for medium transmission line. How it is usefull to find efficiency and regulation of transmission line.	**07**
	(b)	What is generalized constants of a transmission line? Derive equation of it for Medium transmission line using nominal π and T methods.	**07**
Q.2	**(a)**	What is Corona? Explain methods for reducing corona effect. Also state its advantages and disadvantages of corona.	**07**
	(b)	Explain factors affecting Corona.	**07**
		OR	
	(b)	A short 3 phase transmission line with an impedance of $6 + j8\ \Omega$ per phase has sending and receiving voltages of 120 KV and 110 KV respectively for some receiving end load at a p.f of 0.9 lagging. Determine (1) Power output (2) sending end power factor.	**07**
Q.3	**(a)**	State advantages of Neutral grounding. Explain resistance grounding with suitable diagram.	**07**
	(b)	Explain following terms with reference to corona (1) Critical Disruptive voltage (2) Visual critical voltage (3) Power loss due to corona.	**07**
		OR	
Q.3	**(a)**	Explain over voltages due to Arcing ground.	**07**
	(b)	Explain resonant grounding.	**07**
Q.4	**(a)**	Explain travelling waves on transmission line.	**07**
	(b)	What is Symmetrical faults? State steps for symmetrical fault calculations.	**07**
		OR	
Q.4	**(a)**	State advantages of per unit system.	**07**
	(b)	Explain Zero sequence network of a Transformer.	**07**
Q.5	**(a)**	Write a short note on Capacitance switching.	**07**
	(b)	In a 3- phase, 4 wire system, the current in R, Y and B lines under abnormal conditions of loading are as under: $I_R = 100\angle 30^0$ A , $I_Y = 50\angle 300^0$ A, $I_B = 30\angle 180^0$ A Calculate the positive, negative and zero sequence current in the R-line and return current in the neutral wire.	**07**

OR

Q.5	**(a)**	Using appropriate interconnection of sequence networks, derive the equation for a line to line fault in a power system with a fault impedance of Zf.	**07**
	(b)	Write a brief note on selection of circuit breakers	**07**

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