Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC- SEMESTER–IV - EXAMINATION – SUMMER 2017

Subject Code: X40903 **Date:31/05/2017**

Subject Name: Power System Analysis and Simulation

Time: 10:30 AM TO 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 transmission line Derive equation of generalized constants for Medium transmission line using T methods	**07**
	(b)	Define per unit system also explain advantage of per unit system	**07**
Q.2	**(a)**	Explain construction of synchronous machine. Also explain armature reaction in synchronous machine	**07**
	(b)	Write a short note on receiving end power circle diagram.	**07**
		OR	
	(b)	A 220 KV ,50 Hz,three –phase transmission line is 50 km long. The resistance per phase is 0.15 Ω/km. the inductance per phase is 1.33 mH/km and the shunt capacitance is negligible . Use the short line model to determine (i) the voltage and power at the sending end (ii) voltage regulation and efficiency when the line is supplying a three –phase load of 400 MVA ,220 KV at 0.8 p.f.lagging.	**07**
Q.3	**(a)**	Draw the waveforms for fault current for a 3-phase fault on alternator terminals. Explain the sub-transient, transient and steady state reactance	**07**
	(b)	Explain synthesis of Unsymmetrical phasors from their symmetrical components	**07**
		OR	
Q.3	**(a)**	Write a short note on the selection of circuit breaker	**07**
	(b)	Explain the zero sequence impedance of transformer for various connections.	**07**
Q.4	**(a)**	Explain how fault current can be calculated when L-G fault occur through a fault impedance Z^f.	**07**
	(b)	Explain resonant grounding	**07**
		OR	
Q.4	**(a)**	Mention the steps to find the fault current with LL fault in a power system	**07**
	(b)	Explain need of neutral grounding also explain resistance grounding	**07**
Q.5	**(a)**	Write a short note on Corona and the factors affecting it.	**07**
	(b)	Discuss the transients on a series R-L circuit when subjected to a sudden three phase short circuit	**07**
		OR	
Q.5	**(a)**	Write a short note on autotransformer	**07**
	(b)	Explain following related to corona (1) critical disruptive voltage (2) radio interference	**07**

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