Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: X 60904 **Date: 05-06-2014**

Subject Name: Power System Practice and design

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)**	What are corona losses? Discuss its significance and permissible limit. Explain Peek's and Peterson's formula for calculating the corona loss.	**07**
	(b)	Discuss the following factors to be taken into consideration in the mechanical design of a transmission line. 1. Loading on the conductors. 2. Span, sag and tension. 3. Clearance from the ground.	**07**
Q.2	**(a)**	Explain the following distribution systems with figures. 1. Radial system. 2. Parallel or loop system. 3. Network or grid system.	**07**
	(b)	Explain the use of bundled conductors in EHV transmission lines. Also explain how the spacing, selection of size and number of conductors for the EHV lines is done.	**07**
		OR	
	(b)	Discuss Kelvin's law to find the most economical conductor size. What are the Limitations of this law?	**07**
Q.3	**(a)**	What are the equipments are used in substation give importance of each equipments	**07**
	(b)	Write a short note on Gas insulated substation(GIS)	**07**
		OR	
Q.3	**(a)**	Discuss method of reducing tower footing resistance.	**07**
	(b)	What is string efficiency? How it can be improved.	**07**
Q.4	**(a)**	Write detailed technical note on substation earthing.	**07**
	(b)	What is Ferranti effect? When and how it become significant? Explain methods to reduce it.	**07**
		OR	
Q.4	**(a)**	Explain the different issues of Interconnections with Wind and solar PV.	**07**
	(b)	Explain construction of different types of cables used in practice.	**07**
Q.5	**(a)**	Explain measurement of earthing resistance.	**07**
	(b)	Write Short note on insulation co-coordination.	**07**
		OR	
Q.5	**(a)**	Draw the schematic of an HVDC system and hence explain its principle of Operation. Discuss various types of HVDC links used.	**07**
	(b)	Discuss merits and demerits of HVDC system in detail.	**07**

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