Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VI. EXAMINATION – SUMMER 2016

Subject Code:X60904 Date:09/05/2016

Subject Name:Power System Practice and Design

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 three phase transmission line is required to transmit 150 MW of power at a p.f. of 0.92 (lag) , over a distance of 130 km : (a) Choose voltage and conductor spacing. (b) Calculate size of conductor. (c) Calculate line constants and hence evaluate its efficiency and regulation. Comment on your answers and clearly mention assumed values. Use calculated values as standard size values.	**14**
Q.2	**(a)**	The following loads are connected to a three phase four wire 400/230 V distribution system. 1. A three phase 20 kW load at 0.8 p.f. lagging. 2. A three phase 12 kW load at unity power factor. 3. A single phase 3 kW load at 0.9 p.f. lagging between phase R and neutral. 4. A single phase 3 kW load at 0.8 leading p.f. between phase Y and neutral. 5. A single phase load of 5 kW at unity power factor between phase B and neutral. The phase sequence of the system is RYB. Calculate the current in each line and current in the neutral. Draw phasor diagram.	**07**
	(b)	Write technical note on Corona.	**07**
		OR	
	(b)	Derive equation for sag in a transmission line with supports at equal level.	**07**
Q.3	**(a)**	Discuss how economic conductor size of cable is calculated using Kelvin's law for the given load cycle.	**07**
	(b)	Explain limitations of HVDC transmission system.	**07**
		OR	
Q.3	**(a)**	Draw one line diagram of HVDC transmission system and explain the function of each in brief	**07**
	(b)	Discuss the phenomenon of lamp flicker in detail. How it can be reduced?	**07**
Q.4	**(a)**	Explain methods of reducing tower footing resistance.	**07**
	(b)	Briefly explain various distribution systems.	**07**
		OR	
Q.4	**(a)**	Discuss Economic feasibility of HVDC line. Explain what is back to back HVDC link and its suitability with practical example.	**07**
	(b)	Discuss significance of string efficiency and explain methods to improve it.	**07**
Q.5	**(a)**	With neat diagram explain the construction of a three and a half core cable.	**07**
	(b)	Write note on insulation coordination.	**07**
		OR	
Q.5	**(a)**	Prepare a technical note on substation earthing.	**07**
	(b)	Explain methods of power system improvements.	**07**

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