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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (OLD) - EXAMINATION – SUMMER 2017

Subject Code:180903 **Date:02/05/2017**

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)**	Explain classification of lamp-flicker and remedies for reducing lamp-flicker.	**07**
	(b)	Explain applications of HVDC system.	**07**
Q.2	**(a)**	Explain methods of reducing tower footing resistance.	**07**
	(b)	The cost of a 3-phase overhead transmission line is Rs. (25000a + 2500) per KM where 'a' is the area of cross-section of each conductor in cm^2 The line is supplying a load of 5 MW at 33 KV and 0.8 p.f. lagging assumed to be constant throughout the year. Energy costs 4 paise per Kwh. Interest and depreciation is 10 % per annum. Find the most economical size of conductor. Give that specific resistance of conductor. Given that specific resistance of conductor material is 10^{-6} ohm cm.	**07**
		OR	
	(b)	A 2 wire d.c. distributor AB is 200 m long. The resistance of each conductor is 0.4 Ohm per KM. It supplies loads of 20 A, 35 A, 25 A and 30 A at points C, D, E and F situated at 50, 80, 100 and 150 m from end A. Calculate the potential difference at each load point if potential difference of 250 V is maintained at point A.	**07**
Q.3	**(a)**	Explain Kelvin's law for most economical size of conductor. What are the limitations of this law.	**07**
	(b)	A single phase distributor AB has loop resistance of 0.3 ohm and reactance of 0.4 ohm. The far end of the distributor has a load current of 80 A and p.f. 0.8 lagging at 220 V. The mid point M of the distributor has a load current of 50 A at p.f. 0.707 lagging with reference to voltage at B. Calculate the sending end voltage and power factor.	**07**
		OR	
Q.3	**(a)**	Explain the following distribution system with figures. (1) Radial system (2) Parallel or Loop system (3) Network or Grid system	**07**
	(b)	Explain (1) Selection of arrester voltage rating (2) Arrester discharge voltage (3) Arrester discharge current	**07**
Q.4	**(a)**	Explain the design considerations for EHV transmission lines.	**07**
	(b)	Discuss briefly the design consideration in distribution system. Define and explain the terms: Feeder, distribution and service mains.	**07**
		OR	
Q.4	**(a)**	Explain step potential, touch potential and earthing grid.	**07**
	(b)	Explain the types of DC links used in HVDC transmission.	**07**
Q.5	**(a)**	What is insulation co-ordination. Explain insulation levels of various substation	**07**

equipments for 132 KV substation.

	(b)	Explain Gas Insulated substation.	**07**

OR

Q.5	**(a)**	Explain Radio and Television interference.	**07**
	(b)	Explain how will you select the sizes and location of generating substations.	**07**

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