Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – SUMMER 2014

Subject Code: 180903 Date: 03-06-2014

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)**	What are the design considerations for EHV transmission line? Explain radio and television interference.	**07**
	(b)	Explain methods of reducing tower footing resistance	**07**
Q.2	**(a)**	Discuss briefly the design consideration in distribution system. Define and explain the terms Feeder, Distribution and Service mains.	**07**
	(b)	Explain tuned power lines.	**07**
		OR	
	(b)	A 2 wire d.c. distributor AB is fed from both ends. At the feeding point A the voltage is maintained at 240 V and at B 245 V. The total length of the distribution is 200 meters and loads are tapped off as under : 25A at 50 meters from A; 50A at 75 meters from A; 30 A at 100 meters from A; 40 A at 150 meters from A. If the resistance per km of one conductor is 0.3 Ω., Calculate (1) The current in the various sections of the distributor. (2) The minimum voltage and the point at which it occurs.	**07**
Q.3	**(a)**	Explain classification of lamp flicker and remedies for reducing lamp flicker.	**07**
	(b)	A two conductor cable one km long is required to supply a constant load of 180 A throughout the year. The cost of cable is Rs (120 a + 60) per meter, where 'a' is the area of cross section of the conductor in cm^2 The cost of energy is 20 paise per KWh and interest and depreciation charges amount to 10 %. Resistivity of copper is 1.84 μΩ cm. Find the most economical cross section of the cable.	**07**
		OR	
Q.3	**(a)**	Discuss the consideration in the location of substation.	**07**
	(b)	A 3 phase star connected system with 230 Volts between each phase and neutral has resistances of 4Ω, 5Ω and 6Ω respectively in three phases. Estimate the current flowing in each phase and the neutral current. Find the total power absorbed.	**07**
Q.4	**(a)**	Explain the main considerations in the planning and designing generating stations in power system with reference to the following (1) Size of unit (2) Location of power stations (3) Choice of generator unit constants	**07**
	(b)	Explain station earthing system with earthing grid.	**07**
		OR	
Q.4	**(a)**	Name the equipments you observe in large substation and explain the function of each.	**07**
	(b)	Write a note on location of lighting arrestor.	**07**
Q.5	**(a)**	What is insulation coordination? Explain insulation levels of various substation equipments for 132 KV substations.	**07**
	(b)	Discuss in brief application of HVDC system	**07**
		OR	
Q.5	**(a)**	Explain advantages of HVDC transmission lines and discuss its limitation.	**07**
	(b)	Explain the types of D.C. links used in HVDC transmission.	**07**

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