Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (old) - EXAMINATION – SUMMER 2018

Subject Code:180903 **Date:02/05/2018**

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)**	Discuss classification of distribution systems with neat diagrams. What are the advantages and dis-advantages of each?	**07**
	(b)	Enlist the steps to be followed for the construction of receiving end and sending end power circle diagram. How the losses are determined from receiving end diagram?	**07**
Q.2	**(a)**	Define critical disruptive voltage and visual critical voltage. How Corona los can be determined? What is significance of Corona in the design of transmission line?	**07**
	(b)	Determine ABCD constants and Regulation of 3-phase Transmission line considering following data. Power = 85,000 kW, p.f.= 0.9 lagging, Distance = 160 km, Voltage = 230 kV, Spacing of conductors = 10.2 m , Resistance/km = 0.22 Ω, outer radius R = 0.827 cm, Self GMD =0.768 R.	**07**
		OR	
	(b)	A single phase a.c. distributor 500 m long has a total loop impedance of (0.02 +j0.04) Ω and is fed from one end at 250 V. It is loaded as under: 1. 50 A at unity power factor, 200 m from the feeding point. 2.100 A at 0.8 power factor lag, 300 m from the feeding point. 3. 50 A at 0.6 power factor lag, at the far end. Calculate the total voltage drop in the distributor and the voltage at the far end.	**07**
Q.3	**(a)**	State and explain Kelvin's law for the most economical cross section of conductor.	**07**
	(b)	The cost of two core feeder cable, including installation is (90a +10) per metre & interest and depreciation charges are 15%. The cable 1 km in length and cost of energy is 3 paisa per unit. Maximum current in the feeder is 260 A and demand is such that copper loss is equivalent to that would be produced by full current flowing for 6 months. If resistance of conductor of 1 sq. cm. and 1 km length is 0.173 ohm. Calculate most economical cross sectional area.	**07**
		OR	
Q.3	**(a)**	What is lamp flicker? What are its causes? What type of loads are responsible for it? How can it be reduced?	**07**
	(b)	Explain the steps involve in the lightning arrestor selection. Highlight the effect of earthling for selecting voltage rating of the arrestor.	**07**
Q.4	**(a)**	Define Insulation Coordination. Explain Insulation Co-ordination curves.	**07**
	(b)	What methods are adopted to reduce the tower footing resistance.	**07**
		OR	
Q.4	**(a)**	What is stringing chart ? How the preliminary design of tower is carried out?	**07**
	(b)	Discuss applications of HVDC systems	**07**
Q.5	**(a)**	Write a brief note on Gas Insulated Substation	**07**
	(b)	Explain the various types of DC link. Name some HVDC systems in India and its Future.	**07**

OR

Q.5 **(a)** What are the limitations of HVAC transmission? Give the applications of HVDC system. **07**

(b) What is earth resistance ?Why its value should be as low as possible ?How it is measured with voltmeter-ammeter method ? **07**

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