

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (OLD) EXAMINATION – SUMMER 2019

Subject Code: 180903

Date: 13/05/2019

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)** How spacing between the conductors and voltage selection is carried out to design the transmission line? **07**
- (b)** Explain the phenomena of “Corona Loss”. How is it calculated? **07**
- Q.2 (a)** State & explain the Kelvin’s law to determine the economical size of conductor. **07**
- (b)** A 3-core distribution cable is 250 meter long and supplies a load of 75 KW at 400 V at 0.8 power factor lag for 3000 Hrs in a year. The cable cost including installation is Rs (12 a + 30) per meter where “a” is the cross sectional area of conductor in Sq. cm. Cost of energy wasted is 10 paisa per unit and the rate of interest and depreciation is 10%. The resistance per Km of the conductor of 1 cm² cross section is 0.25 Ω. Find the most economical cross section of the distribution cable. **07**
- OR**
- (b)** List out the different equipments used in sub-station. Explain the function of each. **07**
- Q.3 (a)** Explain Lamp-flickering. What are the causes and remedies of it? **07**
- (b)** Explain the Gas-Insulated Substation. **07**
- OR**
- Q.3 (a)** Compare HVDC & HVAC system. **07**
- (b)** Draw the well-labeled diagram of HVDC system. **07**
- Q.4 (a)** What are the important factors for designing extra high voltage transmission line? **07**
- (b)** Discuss the important factors for the location of substation. **07**
- OR**
- Q.4 (a)** Derive the necessary equation to calculate the sag in case of equal level of transmitting tower. **07**
- (b)** A 2-wire d.c. distribution AB is fed from both ends. At the feeder point A the voltage is maintained at 240 V and at B 245 V. The total length of distributor is 200 meter and loads are tapped off as under. 20 A at 50 meter from A, 40 A at 75 meter from A, 23 A at 100 meter from A, 42 A at 150 meter from A. If the resistance per Km of one conductor is 0.3 Ω. Calculate the current in the various section of the distributor. **07**
- Q.5 (a)** Explain “Touch” and “Step” potential. How to measure soil resistivity? **07**
- (b)** Explain factors to be considered for selection of size and location of generating station. **07**
- OR**
- Q.5 (a)** Explain the different types of DC distribution system. **07**
- (b)** Give the comparison between Radial and Ring type distribution system. **07**
