

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER–VIII • Remedial EXAMINATION – WINTER 2013

Subject Code: 180903

Date: 17/09/2013

Subject Name: Power System Practice and Design

Time: 03:00 pm – 05:30 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 selection and size of feeders using Kelvin's Law. **07**
(b) Define Surge Impedance Loading. Explain the significance of it in Transmission Line design. **07**

Q.2(a) Explain the factors while considering choice and spacing of conductors for Transmission Line design. **07**
(b) Determine ABCD constants and Regulation of 3-phase Transmission line considering following data. **07**
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

OR

(b) Explain Gas Insulated Sub-Station. **07**

Q.3(a) Differentiate between shunt and series compensation. **07**
(b) Explain the Corona effects and loss with standard formula. **07**

OR

Q.3(a) Explain the factors while considering the size and locations of Sub Station. **07**
(b) Explain the difference between Ring and Radial type Distribution System. **07**

Q.4(a) The following loads are connected to a three phase four wire 415/230 V distribution system. **07**
1. A three phase 15 kW load at 0.9 power factor lagging.
2. A three phase 8 kW load at unity power factor.
3. A single phase 1.5 kW load at 0.8 power factor lagging between the phase R and neutral.
4. A single phase 3 kW load at 0.9 power factor leading between the phase Y and neutral.
5. A single phase 2 kW load at unity power factor between the phase B and neutral.

The phase sequence is RYB. Calculate the currents in each line and current in Neutral.

- (b) Write a Short note on Lamp Flickering. **07**
- OR**
- Q.4(a)** Discuss in detail the steps in planning and designing electrical distribution schemes. **07**
- (b) Define Insulation Coordination. Explain Insulation Co-ordination curves. **07**
- Q.5(a)** Explain the different issues of Interconnections with Wind and solar PV. **07**
- (b) Explain single line diagram of HVDC Transmission system. **07**
- OR**
- Q.5(a)** Explain the Merits and Demerits of HVDC Transmission System. **07**
- (b) Write short notes on EHV System in India. **07**
