

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII EXAMINATION – WINTER 2015

Subject Code:180903**Date:07/12/2015****Subject Name: Power System Practice and Design****Time: 2:30pm to 5:00pm****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 is the effect of (1) stranded conductors, (2) bundled conductors (3) hollow conductors on corona? **07**
- (b) What is lamp flicker? What are its causes? What type of loads are responsible for it? How can it be reduced? **07**
- Q.2** (a) Compare radial, ring and grid distribution system. State their applications, **07**
- (b) A 3-phase overhead line consists of three conductors in equilateral formation with 2.44 metre spacing. The conductor diameter is 1.04 cm and surface factor (m) is 0.85. The air temperature and pressure are 21.1⁰ C and 74cm of mercury. Find visual critical corona voltage. **07**
- OR
- (b) Explain the factors to be considered in selection of a voltage suitable for transmitting a certain amount of power at a given distance. **07**
- Q.3** (a) Explain the methods of designing primary distribution system with reference to (1) Choice of voltage (2) Conductor size (3) type of distribution system (4) voltage drops. **07**
- (b) Explain main considerations in mechanical design of transmission line **07**
- OR
- Q.3** (a) Explain touch potential and step potential. How to measure soil resistivity? **07**
- (b) Draw substation layout. Explain each component of layout. **07**
- Q.4** (a) State and explain Kelvin's law for most economical conductor size with necessary derivation. **07**
- (b) Write a short note on Gas Insulated substation. **07**
- OR
- Q.4** (a) Explain (1) insulation co ordination (2) BIL (3) selection of arrester voltage rating (4) protective margin. **07**
- Q.4** (b) Explain factors to be considered for selection of size and location of generating station. **07**
- Q.5** (a) Explain merits and demerits of HVDC transmission line briefly. **07**
- (b) Draw and explain single line diagram showing main **07**

connections of HVDC transmission.

OR

- Q.5** (a) Discuss applications of HVDC systems. **07**
- (b) Explain the use of bundled conductors in EHV transmission lines. Also explain how the spacing, selection of size and number of conductors for the EHV lines is done. **07**
