

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (OLD) - EXAMINATION – SUMMER 2018

Subject Code:140902

Date:24/05/2018

Subject Name:Electrical Power

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) With a schematic diagram explain function of main components of Gas Turbine Power plant. **07**
(b) Compare overhead transmission system with underground transmission system. **07**
- Q.2** (a) Explain with diagram elements of hydro-electric power plant. **07**
(b) Explain function of various equipments used in substation. **07**
- OR**
- (b) What do you understand by thermal shielding? Also explain the functions of a reflector. **07**
- Q.3** (a) What is string efficiency? Explain various methods of improving string efficiency. **07**
(b) Discuss advantages and disadvantages of nuclear power station. **07**
- OR**
- Q.3** (a) Each line of a 3-phase system is suspended by a string of 3 similar insulators. If the voltage across the line unit is 17.5 kV, calculate the line to neutral voltage. Assume that the shunt capacitance between each insulator and earth is 1/8th of the capacitance of the insulator itself. Also find the string efficiency. **07**
(b) Explain general construction of cable with neat diagram. **07**
- Q.4** (a) Explain with diagram (i) Pin type and (ii) Suspension type of insulators. **07**
(b) What are disadvantages of low power factor? Explain methods improving power factor. **07**
- OR**
- Q.4** (a) Derive an expression for most economical power factor. **07**
(b) In a three phase line the three conductors are placed at the corners of a triangle of sides 1.5 m, 3m, and 2.6 m respectively. If the diameter of each conductor is 1.4 cm and the conductors are regularly transposed, calculate the inductance/phase/km length of the line. **07**
- Q.5** (a) Discuss wind turbine unit with battery storage facilities. **07**
(b) Explain (i) Skin effect and (ii) Proximity effect. **07**
- OR**
- Q.5** (a) Derive the equation for inductance of three phase transmission line with Unsymmetrical spacing. Assume transposition. **07**
(b) Enumerate types of neutral earthing and explain any one with neat sketch. **07**
