

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – SUMMER 2013****Subject Code: 140902****Date: 12-06-2013****Subject Name: Electrical Power****Time: 10:30am – 01:00pm****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)** With a schematic diagram explain function of main components of Gas Turbine power plant. **07**
- (b)** Discuss advantages and disadvantages of nuclear power station. **07**
- Q.2 (a)** Explain with diagram elements of hydro-electric power plant. **07**
- (b)** Explain the different types of turbine used in hydro power station. **07**
- OR**
- (b)** Explain (i) Solar pond power plant and (ii) Binary cycle thermal power plant with neat diagram. **07**
- Q.3 (a)** What is string efficiency? Explain various methods of improving string efficiency. **07**
- (b)** Explain general construction of cable with neat diagram. **07**
- OR**
- Q.3 (a)** Compare overhead transmission system with underground transmission system. **07**
- (b)** Explain with diagram (i) Pin type and (ii) Suspension type of insulators. **07**
- Q.4 (a)** Derive the equation for inductance of three phase transmission line with unsymmetrical spacing. Assume transposition. **07**
- (b)** Explain (i) Skin effect and (ii) Proximity effect. **07**
- OR**
- Q.4 (a)** Derive expression for capacitance of single phase transmission line taking into account the effect of earth. **07**
- (b)** Three conductors of a three phase transmission line are arranged in a horizontal plane and are 4 meter apart. The diameter of each conductor is 2 cm. Assume transpositions. Calculate the capacitance to neutral per Km length of line. **07**
- Q.5 (a)** What are disadvantages of low power factor? Explain methods improving power factor. **07**
- (b)** Explain (i) Voltage transformer earthing and (ii) Earthing transformer. **07**
- OR**
- Q.5 (a)** Explain function of various equipments used in substation. **07**
- (b)** In 33KV, overhead lines there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11 % of self capacitance of each insulator, find (i) The distribution of voltage over three insulators and (ii) String efficiency. **07**
