Seat No.: _____ Enrolment No._____

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**

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