Seat No.: _____ *Enrolment No.:_____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Semester-III Examination WINTER-2014

Subject Code : 132401 **Date : 30-12-2014**

Subject Name : Basic Power System Engineering **Total Marks : 70**

Time: 02.30 pm - 05.00 pm

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the symmetrical components in terms of phase currents and derive necessary equations for currents.	**07**
	(b)	Explain in brief the uses and importance of transformer, breaker, isolator and fuses in power system.	**07**
Q.2	**(a)**	Draw the schematic arrangement of nuclear power station and explain each stage in brief.	**07**
	(b)	Explain the Proximity effect and Ferranti effect in brief.	**07**
		OR	
	(b)	List and explain the disadvantages of low power factor.	**07**
Q.3	**(a)**	Derive the equation of an inductance of a conductor in single-phase two-wire line.	**07**
	(b)	Derive the equation of a capacitance from the conductor to neutral in three-phase overhead line with unsymmetrical spacing.	**07**
		OR	
Q.3	**(a)**	Derive the equation of a capacitance between conductors in single-phase two-wire line.	**07**
	(b)	Derive the equation of an inductance of each conductor in three-phase overhead line with unsymmetrical spacing.	**07**
Q.4	**(a)**	Explain in detail the performance of single-phase short transmission line.	**07**
	(b)	Derive the equation of most economical power factor.	**07**
		OR	
Q.4	**(a)**	Explain the nominal-T method for the solution of medium transmission line.	**07**
	(b)	List the causes of low power factor. Explain the synchronous condenser method of power factor improvement.	**07**
Q.5	**(a)**	List the advantages of HVDC transmission.	**07**
	(b)	Explain the circuit behavior under single line-to-ground fault of ungrounded neutral system.	**07**
		OR	
Q.5	**(a)**	Draw the schematic diagram and explain the components of HVDC transmission system	**07**
	(b)	Explain the resistance grounding in detail.	**07**

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