Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III• EXAMINATION – SUMMER 2015

Subject Code: 132401 **Date:29/05/2015**

Subject Name: Basic Power System Engineering

Time: 02.30pm-05.00pm **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)**	Define 'Power Factor'. Explain the power triangle and deduce necessary formula from it. Enumerate the causes of low power factor.	**07**
	(b)	Enlist the various power factor improvement methods and explain any two methods in detail.	**07**
Q.2	**(a)**	Write the principle of HVDC transmission. Explain its operation and control techniques with the help of block diagram.	**07**
	(b)	Enumerate the basic equipment used in HVDC transmission. Explain the operation of converters in HVDC transmission system.	**07**
		OR	
	(b)	Discuss on various disadvantages of low power factor.	**07**
Q.3	**(a)**	State the factors to be considered for the selection of thermal power plant. Draw schematic diagram of the thermal power plant and explain the following. (a) Cooling water cycle (b) Feed water and steam cycle	**07**
	(b)	Draw the schematic diagram of Hydro power plant and explain the following. (a) Spillway (b) tunnel (c) catchment area	**07**
		OR	
Q.3	**(a)**	Draw the schematic arrangement of Nuclear Power plant and explain its various stages.	**07**
	(b)	Discuss on criteria for the selection of site for Nuclear Power Plant and enumerate its advantages & disadvantages.	**07**
Q.4	**(a)**	What is solid grounding? Enumerate its advantages and disadvantages.	**07**
	(b)	Derive the equation for inductance of single – phase two wire lines.	**07**
		OR	
Q.4	**(a)**	Write a detailed note on bundled conductors.	**07**
	(b)	What do you understand by 'Neutral Grounding'? Discuss on Earthing with respect to power system.	**07**
Q.5	**(a)**	Explain the transposition of transmission line.	**07**
	(b)	The three conductors of a three phase line are arranged in a horizontal plane and are 4-metre apart. The diameter of each conductor is 2-cm. If the lines are transposed, calculate the new inductance and capacitance per km referred to neutral.	**07**
		OR	
Q.5	**(a)**	Explain the sending end circle diagram.	**07**
	(b)	Explain the receiving end circle diagram.	**07**

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