Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (New) EXAMINATION – WINTER 2015

Subject Code:2142404 **Date:19/12/2015**

Subject Name: BASIC POWER SYSTEMS

Time: 2:30pm to 5:00pm **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)**	Draw schematic arrangement of gas turbine power plant and list out its main components.	**07**
	(b)	Draw schematic arrangement of nuclear power plant and list out its main components.	**07**
Q.2	**(a)**	Explain the disadvantages of low power factor. Explain the calculation of power factor correction with necessary diagram.	**07**
	(b)	Discuss the importance of power factor improvement. Derive the expression of most economical power factor.	**07**
		OR	
	(b)	Explain the Nominal π method used for the solution of medium transmission line.	**07**
Q.3	**(a)**	Define String efficiency. Explain method of improving string efficiency.	**07**
	(b)	What is Corona effect? Which factor affecting its? Explain advantage & disadvantages of corona.	**07**
		OR	
Q.3	**(a)**	What is sag? Explain the calculation of sag in transmission line	**07**
	(b)	Explain the Skin effect, Proximity effect and Ferranti effect in brief.	**07**
Q.4	**(a)**	Derive the equation of the inductance in case of single phase transmission line.	**07**
	(b)	Enlist the basic equipments used in HVDC transmission. Explain the operation of Converters in HVDC transmission system.	**07**
		OR	
Q.4	**(a)**	Write the principle of HVDC transmission. Explain its operation and control techniques with the help of block diagram.	**07**
	(b)	Explain the basics of symmetrical component transformation. Derive equations of V_{a1}, V_{a2}, and V_{a0}.	**07**
Q.5	**(a)**	What is resistance grounding? What are its advantages and disadvantages?	**07**
	(b)	Enlist the equipments along with its symbols used in Sub-stations.	**07**
		OR	
Q.5	**(a)**	Give the Classification of Sub-station. Explain comparison between indoor and outdoor substation.	**07**
	(b)	What is neutral grounding? What are the advantages of neutral grounding?	**07**

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