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 07 components. (b) Draw schematic arrangement of nuclear power plant and list out its main 07 components. **Q.2** (a) Explain the disadvantages of low power factor. Explain the calculation of power 07 factor correction with necessary diagram. (b) Discuss the importance of power factor improvement. Derive the expression of **07** most economical power factor. OR (b) Explain the Nominal π method used for the solution of medium transmission 07 line. 0.3 Define String efficiency. Explain method of improving string efficiency. **07** What is Corona effect? Which factor affecting its? Explain advantage & **(b)** 07 disadvantages of corona. OR What is sag? Explain the calculation of sag in transmission line 0.3 07 (a) Explain the Skin effect, Proximity effect and Ferranti effect in brief. 07 **(b) Q.4** Derive the equation of the inductance in case of single phase transmission line. 07 Enlist the basic equipments used in HVDC transmission. Explain the operation **07** of Converters in HVDC transmission system. OR Write the principle of HVDC transmission. Explain its operation and control 0.4 07 techniques with the help of block diagram. (b) Explain the basics of symmetrical component transformation. Derive equations 07 of V_{a1} , V_{a2} , and V_{a0} . What is resistance grounding? What are its advantages and disadvantages? 07 Q.5 (a) Enlist the equipments along with its symbols used in Sub-stations. 07 OR (a) Give the Classification of Sub-station. Explain comparison between indoor and 07 Q.5 outdoor substation.

(b) What is neutral grounding? What are the advantages of neutral grounding?

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