

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER III- • EXAMINATION – SUMMER-2014

Subject Code: 132401**Date: 28-05-2014****Subject Name: Basic Power Systems Engineering****Time: 02.30 pm to 05.00 pm****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) What is transposition? What is its requirement? Explain in detail the concept of transposition. **07**
(b) Derive the expression for inductance for 3 phase overhead line with unsymmetrical spacing. **07**
- Q.2** (a) Draw and explain schematic of hydro power plant. **07**
(b) What is power factor? What are the ill effects of low power factor? Derive formula for most economical power factor. **07**
- OR**
- (b) Explain various methods to improve power factor. **07**
- Q.3** (a) Draw and explain schematic of thermal power station. **07**
(b) What is neutral grounding? Explain solid grounding. **07**
- OR**
- Q.3** (a) Explain in detail resistance and reactance grounding. **07**
(b) Define PU system. What are its advantages? Derive related equations for base impedance for single phase system. **07**
- Q.4** (a) A Three phase, 50 Hz, 5 kW motor has power factor 0.75 lagging. If power factor is to be improved to 0.90 lagging, calculate kVAr of the capacitors to be connected in parallel with given motor efficiency 90%. **07**
(b) State and explain symmetrical components. **07**
- OR**
- Q.4** (a) What is the method to draw universal circle diagram? What is its importance? **07**
(b) What is the use of breakers, isolators and transformers in power system? **07**
- Q.5** (a) Find the inductance per km of a 3 phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m. **07**
(b) What are the relative advantages and disadvantages of HVDC system in comparison to HVAC system? **07**
- OR**
- Q.5** (a) Explain the role of basic equipments used in HVDC system. **07**
(b) What is nuclear power? What are the advantages and disadvantages of nuclear power stations? Explain nuclear power station with neat diagram **07**
