

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Regular / Remedial Examination December 2010

Subject code: 132401

Subject Name: Basic Power Systems Engineering

Date: 16 /12 /2010

Time: 10.30 am – 01.00 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 are the advantages and disadvantages of HVDC transmission over AC transmission? 07
- (b) Draw the schematic diagram of a Nuclear power station and discuss its operation. 07
- Q.2** (a) What is flux linkage? Find an expression for the flux linkages due to a single current carrying conductor. 07
- (b) Why is there phase difference between voltage and current in a.c. circuit? Explain the concept of power factor. 07
- OR**
- (b) Discuss the disadvantages of low power factor. 07
- Q.3** (a) Derive an expression for the loop inductance of a single phase overhead transmission line. 07
- (b) Derive an expression for line to neutral capacitance for a three phase overhead transmission line when conductors are unsymmetrically placed. 07
- OR**
- Q.3** (a) Derive an expression for the inductance per phase for a three phase overhead transmission line when conductors are symmetrically placed. 07
- (b) Derive an expression for the capacitance of a single phase overhead transmission line. 07
- Q.4** (a) What is circuit breaker? Describe its operating principle. 07
- (b) What is fuse? Discuss advantage and disadvantages of a fuse. 07
- OR**
- Q.4** (a) Discuss the various methods for power factor improvement with neat circuit diagrams. 07
- (b) Draw the schematic diagram of a modern steam power station and explain its operation. 07
- Q.5** (a) What is grounding? Describe equipment grounding with neat diagrams. 07
- (b) Write short note on: Ferranti effect 07
- OR**
- Q.5** (a) What is neutral grounding? What are its advantages? 07
- (b) Explain Symmetrical components. 07
