

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-III Examination May 2012****Subject code: 132401****Subject Name: Basic Power Systems Engineering****Date: 10/05/2012****Time: 02.30 pm – 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) Compare HVDC and AC transmission system stating their relative advantages and disadvantages. **07**
(b) What is circuit breaker? Describe its operating principle. State difference between circuit breaker and fuse. **07**
- Q.2** (a) Derive equation for capacitance for the three phase line with symmetrical spacing. **07**
(b) Draw the schematic diagram of a nuclear power station and discuss its operation. **07**
- OR**
- (b) What is flux linkage? Find an expression for the flux linkages due to a single current carrying conductor. **07**
- Q.3** (a) A single phase motor connected to a 240 V, 50 Hz supply takes 20 Amp at a power factor of 0.75 lagging. A capacitor is shunted across the motor terminals to improve the power factor to 0.9. Determine the capacitance of the capacitor to be used. **07**
(b) Draw and explain the schematic diagram of hydro power plant. **07**
- OR**
- Q.3** (a) Derive equation for inductance of single phase two wire line. **07**
(b) Explain transposition of transmission line. **07**
- Q.4** (a) Derive Power Factor. Discuss causes of Low Power Factor and state disadvantages of low power factor. **07**
(b) State various methods for power factor improvement. Describe these methods. **07**
- OR**
- Q.4** (a) What is fuse? Discuss advantages and disadvantages of a fuse. **07**
(b) State and define symmetrical components with neat diagram. **07**
- Q.5** (a) What is neutral grounding? What are its advantages and disadvantages? **07**
(b) What is resistance grounding? What are its advantages and disadvantages? **07**
- OR**
- Q.5** (a) Draw the schematic diagram of a modern steam power station and explain its operation. **07**
(b) Write short note on (1) Skin effect (2) Ferranti effect. **07**
