

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – SUMMER • 2014****Subject Code: 140902****Date: 20-06-2014****Subject Name: Electrical Power****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) Give comparison between thermal power plant and hydro power plant. **07**
(b) Give comparison between overhead transmission line and underground transmission line. **07**
- Q.2** (a) Explain advantages and disadvantages of wind energy system. **07**
(b) A single phase load of 10KW operates at 230V, 50Hz supply at power factor of 0.6 lagging. It is required to improve this power factor to 0.95 lagging using bank of capacitors. Find (i) Leading KVAR of the capacitor and (ii) the capacitance of the capacitor bank. **07**
- OR**
- (b) Find line to line capacitance of single phase line 40Km long consisting of 2 parallel wires each of 5mm in diameter and 1.5m apart. Determine the capacitance of the same line taking into account the effect of ground. The height of conductor above ground is 7m. **07**
- Q.3** (a) Explain functions of various equipments used in thermal power station. **07**
(b) Explain advantages and disadvantages of hydro electric power station. **07**
- OR**
- Q.3** (a) Explain with diagram basic elements of Nuclear reactor. **07**
(b) Explain advantages and disadvantages of Gas power plant. **07**
- Q.4** (a) Derive equation for inductance of three phase line with unsymmetrical spacing. Assume transposition. **07**
(b) What are disadvantages of low power factor? Explain methods of improving power factor. **07**
- OR**
- Q.4** (a) Derive equation of capacitance of three phase line with unsymmetrical spacing Assume transposition. **07**
(b) Explain classification of substation. **07**
- Q.5** (a) Explain with diagram general construction of underground cable. **07**
(b) Explain pin type and suspension type insulators used in overhead transmission line. **07**
- OR**
- Q.5** (a) Explain (i) Solid earthing (ii) Peterson coil earthing. **07**
(b) Explain skin effect and proximity effect. **07**
