

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- IV(NEW) EXAMINATION – SUMMER 2015

Subject Code:2140908

Date:01/06/2015

Subject Name:ELECTRICAL POWER GENERATION

Time:10:30am-1.00pm

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) Explain working principle of solar photovoltaic cell. **02**
Draw and explain the I-V and P-V characteristics of solar photovoltaic cell. **05**
(b) Explain the schematic of nuclear power station in detail with necessary diagram. **07**
- Q.2** (a) Give comparison of steam power station and hydro power station. **07**
(b) Draw and explain schematic arrangement of diesel power plant. Give advantages and disadvantages of diesel power plant. **07**
- OR**
- (b) For a steam power plant, explain functions of: **07**
(i) Air Pre Heater (ii) Cooling Tower (iii) ESP
(iv) ID Fan (v) Super heater (vi) Condenser (vii) Boiler feed pump
- Q.3** (a) Explain pyranometer with diagram. **07**
(b) Explain in brief geared, direct drive and hybrid Wind Power Plant and give their comparison. **07**
- OR**
- Q.3** (a) Explain construction and working of solar distillation unit with suitable figure. **07**
(b) Derive equation for maximum power of wind turbine. **07**
- Q.4** (a) The annual consumption of domestic customer is 1500000 units and annual load factor is 40%. What will be the saving in the average unit cost, if the load factor improves to 100%? Consider two part tariff : Rs. 500 per kW of maximum demand per year + Rs. 0.40 per kWh. **07**
(b) Give schematic arrangement and explain the working of combined cycle gas power plant. **07**
- OR**
- Q.4** (a) Draw and explain schematic arrangement and its various components for a hydro power station. **07**
(b) Differentiate between Horizontal and Vertical Axis Wind Turbine. **07**
- Q.5** (a) Enlist various equipments used in substation. **03**
Draw and explain pole mounted substation with suitable figure. **04**
(b) Define (i) Connected load (ii) Plant capacity factor (iii) Diversity factor **07**
(iv) Maximum load (v) Plant use factor (vi) Base load (vii) Peak load
- OR**
- Q.5** (a) Explain reactance earthing in detail. **07**
(b) Explain construction and working of DFIG. **07**
