Seat No.: _____ Enrolment No._____

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: (i) Air Pre Heater (ii) Cooling Tower (iii)ESP (iv) ID Fan (v) Super heater (vi) Condenser (vii) Boiler feed pump	**07**
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 (iv) Maximum load (v) Plant use factor (vi) Base load (vii) Peak load	**07**
		OR	
Q.5	**(a)**	Explain reactance earthing in detail.	**07**
	(b)	Explain construction and working of DFIG.	**07**

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