

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2017

Subject Code: 2140908

Date: 21/11/2017

Subject Name: Electrical Power Generation

Time: 02:30 PM TO 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.

		MARKS
Q.1*	(a) For a steam power plant, explain functions of: (i) Air Pre Heater (ii) Cooling Tower (iii) ESP.	03
	(b) Explain the essential factors which influence the choice of site for a hydro-electric plant.	04
	(c) Enlist different types of nuclear reactors. Explain working of pressurized water nuclear reactor with suitable diagram.	07
Q.2	(a) Why is the overall efficiency of a steam power station very low?	03
	(b) Discuss advantages and disadvantages of diesel power plant.	04
	(c) 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	
	(c) Determine load factor at which the cost of supplying a unit of electricity from a Diesel and from a Steam station is same if the annual fixed and running charges are as follows : Diesel Fixed Rs. 300/kW Running Rs. 0.25/kWh Steam Fixed Rs. 1200/kW Running Rs. 6.25/kWh	07
Q.3	(a) Differentiate between open and closed gas turbine cycles.	03
	(b) Discuss the role of distributed generation in electric power system.	04
	(c) Explain in brief geared, direct drive and hybrid Wind Power Plant and give their comparison.	07
	OR	
Q.3	(a) Write advantages of distributed generation.	03
	(b) Differentiate between Horizontal and Vertical Axis Wind Turbine.	04
	(c) Give schematic arrangement and explain the working of combined cycle gas power plant.	07
Q.4	(a) Discuss advantages and disadvantages of Nuclear power stations.	03
	(b) Draw and explain the I-V and P-V characteristics of solar photovoltaic cell.	04
	(c) Explain construction and working of DFIG.	07
	OR	
Q.4	(a) Explain working principle of solar photovoltaic cell.	03
	(b) What are the major components of wind energy conversion systems?	04
	(c) Explain concept of green building using solar energy.	07
Q.5	(a) Enlist various equipment's used in substation.	03
	(b) Compare outdoor and indoor substations.	04
	(c) Explain arc suppression coil earthing in detail.	07

OR

- Q.5**
- (a)** Why is neutral earthing necessary in power system? How can it be classified? **03**
 - (b)** What is a transformer sub-station? What are the different types of transformer sub-stations? Illustrate your answer with a suitable block diagram. **04**
 - (c)** Explain construction & working of solar refrigeration plant with suitable figure. **07**
