

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2018

Subject Code:2140908

Date:05/12/2018

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 station, explain functions of: (i) Air Pre Heater (ii) Cooling Tower (iii)Economizer	03
(b) Explain the essential factors which influence the choice of site for a nuclear power station.	04
(c) Draw and explain neat schematic arrangement of Hydro power station and discuss function of its constituents.	07
Q.2 (a) Write advantages and disadvantages of Steam power station.	03
(b) Differentiate between open cycle gas turbine and closed cycle gas turbine.	04
(c) Draw and explain schematic arrangement of diesel power plant. Give advantages and disadvantages of diesel power plant.	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. 0.0625/kWh	07
Q.3 (a) What are the sources and features of renewable energy sources?	03
(b) Explain the difference between fusion reaction and fission reaction.	04
(c) Define (i) Connected load (ii) Plant capacity factor (iii) Diversity factor (iv) Maximum load (v) Plant use factor (vi) Base load (vii) load curve.	07
OR	
Q.3 (a) What is tariff? Discuss three part tariff.	03
(b) Differentiate between Horizontal and Vertical Axis Wind Turbine	04
(c) Explain the need of hybrid systems. Discuss solar-wind hybrid power system with suitable diagram and also state its advantages.	07
Q.4 (a) Define: (i) solar constant (ii) beam radiation (iii) Diffuse radiation	03
(b) Draw and explain the I-V and P-V characteristics of solar photovoltaic cell.	04
(c) Derive equation for maximum power of wind turbine.	07
OR	
Q.4 (a) What is solar radiation spectrum?	03
(b) What are the major components of wind energy conversion systems?	04
(c) Explain pyranometer with diagram.	07
Q.5 (a) Why is neutral earthing necessary in power system? How can it be classified?	03
(b) What is resistance grounding? What are its advantages and disadvantages?	04
(c) Write classification of substations.	07
OR	
Q.5 (a) Enlist various equipment's used in substation	03
(b) Compare indoor and outdoor substations.	04
(c) Explain arc suppression coil earthing in detail.	07
