

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2140908

Date:24/05/2018

Subject Name:Electrical Power Generation

Time:10:30 AM to 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.

		MARKS
Q.1	(a) Define grounding. What are the advantages of neutral grounding?	03
	(b) Define overall efficiency and thermal efficiency of thermal power station. Why thermal power station overall efficiency is low?	04
	(c) Explain working of thermal power station with labelled schematic diagram. Also state disadvantages of thermal power station.	07
Q.2	(a) Why starting motor is used in gas turbine power station? What is the main difference between open cycle and combine cycle gas power plant?	03
	(b) Draw block diagram of nuclear power station and explain working of nuclear station including chain reaction.	04
	(c) Explain working of hydro power station with suitable schematic diagram and discuss functions of its constituents.	07
	OR	
	(c) What is tariff? Discuss types of tariff.	07
Q.3	(a) Compare thermal, hydro and nuclear power stations with respect to capital cost, running cost and standby losses.	03
	(b) A thermal power station has a maximum demand of 15MW. The annual load factor is 60% and plant capacity factor is 50%. Determine the reserve capacity of the plant.	04
	(c) List the solar thermal system applications and explain working of natural circulation solar water heating system.	07
Q.3	(a) Define: (i) Load factor (ii) Maximum demand (iii) Plant capacity factor.	03
	(b) Draw a well-labelled diagram of horizontal axis wind turbine (HAWT) generator. What is the function of yaw control and pitch control mechanism?	04
	(c) What is solar photovoltaic system? Discuss its major components. Also state its applications.	07
Q.4	(a) Define: (i) solar constant (ii) beam radiation (iii) Diffuse radiation	03
	(b) Draw and explain working of direct type solar dryers.	04
	(c) Explain the need of hybrid systems. Discuss solar-wind hybrid power system with suitable diagram and also state its advantages	07
	OR	
Q.4	(a) What is total wind power density? State the name of different wind electrical generation schemes.	03
	(b) Discuss the advantages and disadvantages of diesel power station. Also state applications of diesel power stations.	04
	(c) Define solar cell efficiency. Explain solar photovoltaic cell principle. Discuss current-voltage (I-V) characteristic of solar PV cell.	07

- Q.5** (a) Discuss the components of substation in brief. **03**
(b) What are the different methods of neutral grounding? Explain solid grounding. State its advantage and disadvantages. **04**
(c) Write classification of substations. **07**
- OR**
- Q.5** (a) Compare indoor and outdoor substations. **03**
(b) What are the disadvantages of single bus bar scheme? Draw duplicate bus bar scheme and explain its advantages. **04**
(c) What is arcing ground? Explain arc suppression coil (Resonant) grounding. **07**
