

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2023****Subject Code:2140908****Date: 06-02-2024****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) What is meant by water hammering effect? How it is minimized with the help of surge tank?	03
	(b) Explain the functions of the following : (i) Dam (ii) spillways (iii) surge tank (iv) draft tube.	04
	(c) Explain the essential factors which influence the choice of site for a hydro-electric plant.	07
Q.2	(a) What is energy? Write various sources of energy.	03
	(b) Explain functions of the following in relation to nuclear power station: (i) Coolant (ii) Moderator (iii) Control rod (iv) Heat exchanger.	04
	(c) Draw a steam power station and explain its various components and their functions.	07
	OR	
	(c) Draw and explain schematic arrangement of diesel power plant. Give advantages and disadvantages of diesel power plant.	07
Q.3	(a) Discuss advantages and disadvantages of Nuclear power stations.	03
	(b) Explain the difference between fusion reaction and fission reaction.	04
	(c) Explain the working of a closed cycle gas turbine power plant with a schematic diagram	07
	OR	
Q.3	(a) Explain basic principle of wind energy generation.	03
	(b) Compare conventional energy sources with non conventional energy sources.	04
	(c) Explain construction & working of solar refrigeration plant with suitable figure.	07
Q.4	(a) Explain advantages and disadvantages of wind energy.	03
	(b) Discuss the applications of solar energy.	04
	(c) What is substation? Explain classification of substation.	07
	OR	
Q.4	(a) Explain present status of photovoltaic system in Gujarat and India.	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) 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
Q.5	(a) Why is neutral earthing necessary in power system? How can it be classified?	03
	(b) Differentiate between Horizontal and Vertical Axis Wind Turbine.	04
	(c) Explain working principle of solar photovoltaic cell. Also Draw and explain the I-V and P-V characteristics of solar photovoltaic cell.	07

OR

- Q.5** **(a)** What is tariff? Explain the types of tariff. **03**
- (b)** Discuss the points and write the methods of site selection for locating the wind mills. **04**
- (c)** Write a short note on arc suppression coil earthing. Explain the objectives and advantages of earthing. **07**
