Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3150507 Date:16-05-2024

Subject Name: Energy Technology

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Describe the importance of energy conservation.	**03**
	(b)	Elaborate on the terms energy management & energy audit.	**04**
	(c)	Explain in detail the construction of solar cells, solar modules and solar arrays.	**07**
Q.2	**(a)**	List different types of steam used in processes.	**03**
	(b)	Differentiate Gross calorific value and Net calorific value.	**04**
	(c)	Classify commercial waste heat recovery devices (WHRD) and Explain any one commercial waste heat recovery device.	**07**
		OR	
	(c)	Explain the selection criteria of refractories along with their applications.	**07**
Q.3	**(a)**	Define : (i) Solar constant (ii) Beam radiation (iii) Diffuse radiation	**03**
	(b)	Explain in brief about Solar distillation	**04**
	(c)	Describe the principle of operation and working of solar ponds.	**07**
		OR	
Q.3	**(a)**	List various domestic and industrial applications of solar energy.	**03**
	(b)	Explain in brief about Solar pumping.	**04**
	(c)	Classify different types of solar collectors and explain any one in detail.	**07**
Q.4	**(a)**	State the principle and working of the fuel cell.	**03**
	(b)	Explain pyrolysis of biomass	**04**
	(c)	Describe Molten Carbonate Fuel Cell (MCFC) with neat diagram.	**07**
		OR	
Q.4	**(a)**	List applications of fuel cell.	**03**
	(b)	List properties of biogas and explain the utilization of biogas.	**04**
	(c)	Describe Ion exchange membrane cell with neat diagram.	**07**
Q.5	**(a)**	Compare Horizontal axis wind turbine and vertical axis wind turbine.	**03**
	(b)	Discuss thermal gasification of biomass.	**04**
	(c)	Describe with a neat sketch the working of a wind energy system with main components.	**07**
		OR	
Q.5	**(a)**	Classify various types of rotor used in the wind turbine.	**03**
	(b)	Classify biogas plants based on process and design.	**04**
	(c)	Describe how the design of the turbine effect power generation from wind.	**07**

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