Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3161914 Date:02-12-2024

Subject Name:Renewable Energy Engineering

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.**

Q.1	(a)	Explain the adoption of renewable energy sources contribute to India.	**03**
	(b)	Define (1) Direct radiation (2) Diffuse radiation (3) Global radiation (4) Longitude	**04**
	(c)	What is Solar Air heater? Explain different types of Solar Air heaters.	**07**
Q.2	(a)	How does wind energy contribute to reducing greenhouse gas emissions and combating climate change?	**03**
	(b)	Explain the difference between Pyranometer and Pyrheliometer.	**04**
	(c)	Explain the Solar Refrigeration system with neat sketch.	**07**
		OR	
	(c)	Explain the working principle of a Solar Air conditioning system with the help of a labeled sketch.	**07**
Q.3	(a)	Define (1) Solidity of turbine (2) Tip speed ratio (3) Angle of attack	**03**
	(b)	Differentiate Line Focusing and Point Focusing type solar collectors.	**04**
	(c)	Explain the Floating Drum Biogas Plant.	**07**
		OR	
Q.3	(a)	Discuss the various factors for site selection to establish wind power plant.	**03**
	(b)	What is solar still? Explain Single stage single basin solar still with sketch.	**04**
	(c)	What is Biogas? Explain different factors affecting the performance of Biogas generation.	**07**
Q.4	(a)	What is wind? Classify various wind mills.	**03**
	(b)	Differentiate Vapour dominated and Liquid dominated plants for Geothermal energy.	**04**
	(c)	Describe the construction and working of Ocean thermal energy conversion (OTEC) system based on closed cycle with help of schematic diagram.	**07**
		OR	
Q.4	(a)	Differentiate Horizontal axis wind turbine and Vertical axis wind turbine.	**03**
	(b)	Explain the Tidal power plant with double basin system.	**04**
	(c)	Write the advantages of Geothermal Energy. Explain Hot dry rocks (HDR) resources.	**07**
Q.5	(a)	Define (1) solar furnace (2) heliostat (3) solar photovoltaic system	**03**
	(b)	Explain time value of money and payback period.	**04**
	(c)	Explain clean development mechanism.	**07**
		OR	
Q.5	(a)	Define (1) evacuated tube collector (2) solar dryer (3) solar pond	**03**
	(b)	Explain Torque and Power coefficient in context with wind energy.	**04**
	(c)	Explain economic analysis of solar system.	**07**

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