Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - VII EXAMINATION - WINTER 2025

Subject Code: 3174406 **Date: 28-11-2025**

Subject Name: Green Industrial Processes

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 are the basic principles of wind energy and how is it harnessed?	**03**
	(b)	Write about estimation of solar radiation under different conditions.	**04**
	(c)	Explain characterization of visible light responsive semiconductor photo-catalyst.	**07**
Q.2	**(a)**	What are the primary categories of solid waste ?	**03**
	(b)	Write about global status of supply and demand.	**04**
	(c)	Write note on recent advances in solid waste management.	**07**
		OR	
	(c)	What are some best practices for optimizing waste collection routes and schedules to improve efficiency?	**07**
Q.3	**(a)**	Define : Wind turbine,Electrical generator and Pitch Control	**03**
	(b)	How does "green smart factory," integrate green technology with smart technology?	**04**
	(c)	Discuss fundamentals of solar collectors and concentrators.	**07**
		OR	
	(a)	Define the solar power generation.	**03**
	(b)	Explain the meaning of wind energy conversion.	**04**
	(c)	Write note on recycling of solid wastes with relevant examples.	**07**
Q.4	**(a)**	What are the different types of solar energy conversion devices?	**03**
	(b)	How do photovoltaic (PV) cells convert sunlight into electricity?	**04**
	(c)	What are the benefits and challenges of incorporating renewable energy sources into smart factory operations?	**07**
		OR	
	(a)	What is Properties of hydrogen ?	**03**
	(b)	Difference between Renewable Energy Source and Non-Renewable Source.	**04**
	(c)	What is solid waste management and classify in detail ?	**07**

Q.5	**(a)**	Define Municipal waste with examples.	**03**
	(b)	How do wind turbines convert wind energy into electrical energy?	**04**
	(c)	What are the challenges associated with handling and utilizing hydrogen due to its properties?	**07**

OR

	(a)	Defines a "green smart factory,"	**03**
	(b)	Write about advantages and disadvantages Wind energy conversion system.	**04**
	(c)	What are some of the recent developments in hydrogen transportation technologies, and how might they influence the hydrogen economy?	**07**

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