

Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3170116

Date:26-11-2025

Subject Name:Solar and wind Energy

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)	Write brief note on present scenario of renewable energy sources in India.	03
	(b)	Define 1). Clearness index, 2). Azimuth angle, 3). Hour angle and 4). Declination.	04
	(c)	Explain the working of solar drying system with a neat sketch and list its advantages.	07
Q.2	(a)	Explain advantages and disadvantages of wind energy.	03
	(b)	Explain criteria for site selection of wind energy conversion system.	04
	(c)	With a neat sketch explain the solar refrigeration system.	07
OR			
	(c)	Classify and describe Wind Power Plants.	07
Q.3	(a)	Compare solar flat plate and concentric collectors.	03
	(b)	Merits and Demerits of solar photovoltaic energy conversion systems.	04
	(c)	Describe principle and applications of solar ponds.	07
OR			
Q.3	(a)	Differentiate Beam and Diffuse Radiation.	03
	(b)	Explain economic analysis of solar energy.	04
	(c)	Describe a natural circulation solar water heating system with a neat sketch.	07
Q.4	(a)	Define following terms: Annual cost, present worth value, life cycle cost.	03
	(b)	Define following terms: Payback period, Inflation, Return on investment, benefit cost ratio.	04
	(c)	Explain advantages and limitations of solar energy.	07
OR			
Q.4	(a)	Name the various instruments used for solar radiation measurements.	03
	(b)	Explain the methods that can be adopted for increasing the solar cell efficiency.	04
	(c)	Explain wind energy potential and installation in India. Also brief note on safety & environmental aspects of wind farms.	07
Q.5	(a)	What is solar chimney system?	03
	(b)	What are functions of yaw control and pitch control mechanisms in wind turbine?	04
	(c)	Give step by step procedure for the design of a solar photovoltaic based power plant.	07

OR

- Q.5** (a) Explain the different heat losses in Flat plate Collector. **03**
(b) Short Note: Solar Still. **04**
(c) Explain Photovoltaic water pumping system. **07**
