

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170116

Date:05-01-2023

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
<b>Q.1 (a)</b> Write needs of renewable energy.	<b>03</b>
<b>(b)</b> Explain criteria for site selection of wind energy conversion system.	<b>04</b>
<b>(c)</b> Explain: Solar Collectors with Types	<b>07</b>
<b>Q.2 (a)</b> Define terms: i) Altitude angle ii) Zenith angle iii) Clearness Index	<b>03</b>
<b>(b)</b> Explain working of solar cooker.	<b>04</b>
<b>(c)</b> Explain Solar Water heaters with equation.	<b>07</b>
<b>OR</b>	
<b>(c)</b> Describe principle and applications of Solar Ponds.	<b>07</b>
<b>Q.3 (a)</b> Short note: Solar Milk Cooler.	<b>03</b>
<b>(b)</b> Explain Declination angle in detail.	<b>04</b>
<b>(c)</b> Describe classification of wind power plants.	<b>07</b>
<b>OR</b>	
<b>Q.3 (a)</b> Describe Solar water heating plant shortly.	<b>03</b>
<b>(b)</b> Explain measurements of solar radiation.	<b>04</b>
<b>(c)</b> Define various solar angles and their effects on the collection of solar radiation on a tilted flat surface.	<b>07</b>
<b>Q.4 (a)</b> Short note: OFF-SHORE wind farms.	<b>03</b>
<b>(b)</b> What methods can be adopted for increasing the solar cell efficiency?	<b>04</b>
<b>(c)</b> Describe about solar radiation data.	<b>07</b>
<b>OR</b>	
<b>Q.4 (a)</b> What are Reaction Turbines?	<b>03</b>
<b>(b)</b> Short note: Solar cell	<b>04</b>
<b>(c)</b> Explain lift and drag forces for wind energy.	<b>07</b>

- Q.5 (a)** Differentiate horizontal and vertical axes rotors for wind mills. **03**
- (b)** Betz limit theory. **04**
- (c)** Give step by step procedure for the design of a solar photovoltaic power plant. **07**

**OR**

- Q.5 (a)** Define initial and annual cost. **03**
- (b)** Explain economic analysis of solar energy **04**
- (c)** Explain limitation of solar energy. **07**

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