

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3160917

Date:11-12-2023

Subject Name:Wind And Solar Energy

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) Define : Tip Speed Ratio (TSR)	03
(b) How solar water pump works?	04
(c) What is Betz limit? Also explain significance of Betz limit.	07
Q.2 (a) What is grid code and why it is required?	03
(b) Explain stall and pitch control of wind turbines.	04
(c) Write short notes on types of generators used in Wind Turbines.	07
OR	
(c) Explain V-I characteristics of a solar cell.	07
Q.3 (a) Write short note on DFIG type of Wind Generator.	03
(b) Explain Converter control techniques in case of Wind power	04
(c) Write short notes on solar water pumps.	07
OR	
Q.3 (a) What is solar pond?	03
(b) Write short notes on Solar water heater.	04
(c) Explain working of standalone solar PV system.	07
Q.4 (a) What are the types of power converters used in wind generator system ?	03
(b) List out application of solar –thermal systems	04
(c) Explain construction and working of solar cooker.	07
OR	
Q.4 (a) Explain fixed –speed wind turbines with neat sketch.	03
(b) Differentiate Grid-Connected System and Standalone system	04
(c) Explain various types of solar collectors in details.	07
Q.5 (a) Define : (i) Solar Azimuth Angle, (ii) Zenith Angle, (iii) Hour Angle	03
(b) Explain solar passive heating and cooling system.	04
(c) Explain solar Refrigeration and Air conditioning System.	07
Q.5 (a) What is Solar Day Length?	03
(b) Write short note on Solar thermal power generation Technologies.	04
(c) What do you mean by solar cell, module, panel and array?	07
