

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3160917

Date: 29/05/2026

Subject Name: Wind And Solar 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.**

- Q.1** (a) Define Tip speed ratio, stall and pitch control for wind turbine **03**
(b) What do you mean by solar cell, module, panel and array? **04**
(c) Explain different power electronic converter technologies used in wind energy conversion system. **07**
- Q.2** (a) Define Betz limit and explain its significance in wind energy conversion. **03**
(b) Explain the solar energy availability in India throughout the year. **04**
(c) Explain V-I characteristics of a solar cell. **07**
- OR
- Q.2** (c) Draw and explain perturbed and observe MPPT algorithm. **07**
- Q.3** (a) What is Maximum Power Point Tracking (MPPT)? **03**
(b) Write short note on DFIG type of Wind Generator. **04**
(c) Explain Converter in case of Solar System. **07**
- OR
- Q.3** (a) What is Solar Day Length? **03**
(b) Explain the fault ride-through for Wind farms in brief. **04**
(c) Write short notes on types of Generators used in Wind Turbines. **07**
- Q.4** (a) Differentiate Grid-Connected system and Standalone system. **03**
(b) Derive an expression for power generation in wind turbine. **04**
(c) What is an induction generator? Discuss its working and operating characteristics. **07**
- OR
- Q.4** (a) What is grid code and why it is required? **03**
(b) What are the Power quality issues occurring during integration of solar–wind with grid? **04**
(c) Write technical note on Solar Refrigeration and Air Conditioning. **07**
- Q.5** (a) Describe the process of battery sizing for solar applications. **03**
(b) Classify Fixed and Variable speed wind turbines. **04**
(c) Explain solar pond in detail. **07**

OR

Q.5	(a) Give the types of Solar Collector.	03
	(b) List out application of Solar Thermal systems.	04
	(c) Write short note on Solar Street Light.	07
