

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE(MINOR) - SEMESTER-IV EXAMINATION – SUMMER 2023

Subject Code:114AJ01

Date:14-08-2023

Subject Name:Solar Energy System-I

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) Explain the functions of bypass diode with neat diagram.	03
	(b) Explain about power voltage characteristic with the neat diagram.	04
	(c) Sketch the basic connections of solar PV module with the variable resistor to Analyze PV and IV characteristic of PV Module. Explain IV and PV Curve of PV panel in details.	07
Q.2	(a) Explain the concept of net metering in grid tied solar photovoltaic application.	03
	(b) Explain about material development used in the solar PV cell.	04
	(c) Explain the effect of variation in temperature on the current voltage (IV) and power voltage (PV) characteristic of PV Module.	07
	OR	
	(c) Explain the effect of variation in irradiance on the current voltage (IV) and power voltage (PV) characteristic of PV Module.	07
Q.3	(a) Explain current voltage characteristic of solar PV cell with the neat diagram.	03
	(b) State the important parameter of solar PV modules.	04
	(c) What is the term used for the purchase of power between utility and PV Plant owner?. Explain about the span of the agreement and conditions of the same.	07
	OR	
Q.3	(a) Which are the tools used for the solar PV Plants.	03
	(b) Discuss the increase in the installation of solar PV plants in last five years in India.	04
	(c) Explain about series connections of the solar PV Modules with IV Characteristics.	07
Q.4	(a) What is maximum power point in solar PV panel? Explain about it in details	03
	(b) Describe the solar spectrum.	04
	(c) Explain financial model of PV with Power Purchase Agreement and leasing case study.	07

OR

- Q.4** (a) What are types of irradiance? How to measure solar irradiance. **03**
(b) Explain about variation of insolation with the time. **04**
(c) Explain about insolation and energy on horizontal flat plan **07**

- Q.5** (a) Explain the method of power measurement of the solar PV Modules with the neat diagram. **03**
(b) Explain about the government subsidy to establish rooftop power plant. **04**
(c) Explain about various application of the solar photovoltaic systems. **07**

OR

- Q.5** (a) Explain the basic function of blocking diode in details. **03**
(b) Explain about mathematical model of the PV cell with one diode based model. **04**
(c) Explain about parallel connections of the solar PV Modules with IV Characteristics. **07**
