Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- V EXAMINATION-SUMMER 2023

Subject Code: 3150507 Date: 23/06/2023

Subject Name: Energy Technology

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)**	Discuss world energy futures.	**03**
	(b)	Enlist the application of fuel cells.	**04**
	(c)	Define solar collector. List various types of line-focusing type concentrators and explain one of them.	**07**
Q.2	**(a)**	What is the importance of energy conservation and energy audit?	**03**
	(b)	Discuss the properties of biogas.	**04**
	(c)	Why coal preparation is required? Also, explain in detail the steps which are involved to prepare the coal.	**07**
		OR	
	(c)	Discuss in detail the gasification of coal.	**07**
Q.3	**(a)**	Draw a neat sketch of a wind energy conservation system (WECS) with all components.	**03**
	(b)	Define the terms (I) Solar constant, (II) Concentration ratio, (III) Declination angle, (IV) Angle of Incidence.	**04**
	(c)	Explain the different dry processes for biomass conversion.	**07**
		OR	
Q.3	**(a)**	What is the nature of wind?	**03**
	(b)	Enlist various applications of solar energy.	**04**
	(c)	Short note: Types of biogas plant	**07**
Q.4	**(a)**	Explained energy management with different steps.	**03**
	(b)	Explain the power of wind for power generation.	**04**
	(c)	Explain the ion exchange membrane cell with a neat figure.	**07**
		OR	
Q.4	**(a)**	List out conventional and non-conventional energy resources.	**03**
	(b)	Explain the advantages and disadvantages of wind energy.	**04**
	(c)	Describe Molten Carbonate Fuel Cell (MCFC) with a neat diagram	**07**
Q.5	**(a)**	List out the disadvantages of the fuel cell.	**03**
	(b)	Explain the pressure and velocity curves of wind passing through a horizontal axis wind turbine.	**04**
	(c)	Enlist all commercially viable waste heat recovery devices and discuss anyone in detail.	**07**
		OR	
Q.5	**(a)**	Short note on polarization in a fuel cell.	**03**
	(b)	List considerations for site selection of wind energy.	**04**
	(c)	List refractory applications and explain their role in the selection for Energy saving.	**07**