

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3161914****Date:12-07-2023****Subject Name:Renewable Energy Engineering****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
Q.1	(a) Define energy, energy science, and energy technology.	03
	(b) Write detailed note on energy source in India.	04
	(c) What is solar still? Discuss the working of basic type solar still with help of neat sketch also define efficiency of solar still.	07
Q.2	(a) Explain lift and drag technology in wind power.	03
	(b) Explain the concept of solar constant and air Mass.	04
	(c) What is paraboloidal dish collector? Discuss its working with a neat sketch.	07
OR		
	(c) What are the main components of flat plate collector, explain functions of each.	07
Q.3	(a) Explain spring tide and nappy tide.	03
	(b) State advantages and disadvantages of solar thermal power plant over conventional thermal power plant.	04
	(c) Discuss factors affecting bio gas production in detail.	07
OR		
Q.3	(a) Find diameter of wind turbine to generate power of 6 KW at wind speed of 9 m/s and rotor speed of 120 rpm. Assume power coefficient =0.4, mechanical transmission efficiency =0.9 and electrical transmission efficiency =0.9.	03
	(b) Give comparison of horizontal and vertical axis wind mills.	04
	(c) Discuss the working of parabolic cylinder collector.	07
Q.4	(a) What are the causes of wind?	03
	(b) Write advantages and disadvantages of wave energy.	04
	(c) Discuss working of closed OTEC system with help of schematic diagram.	07
OR		
Q.4	(a) Why wind energy is preferred? State its advantages and disadvantages.	03
	(b) Define term selling price, total cost and explain how break-even point can be calculated?	04
	(c) Explain construction and working of horizontal axis wind generator with schematic diagram.	07
Q.5	(a) Explain anaerobic digestion of biomass.	03
	(b) State Faraday's Law? How it is used in MHD system?	04
	(c) Write short note on Clean Development Mechanism.	07
OR		
Q.5	(a) Define (1) Annual Savings (2) Cumulative savings (3) Payback Period.	03
	(b) In what form geothermal energy is obtained? State its merits and demerits.	04
	(c) Explain with neat sketch open cycle MHD power plant.	07