

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024

Subject Code:2170505

Date:15-05-2024

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) What is energy?	03
	(b) Define following terms: Calorific Value, Gross Calorific Value, Net Calorific Value, Fossil Fuel	04
	(c) What is meant by conventional and non-conventional energy? Please describe briefly.	07
Q.2	(a) Define gasification and discuss the various zones occurring during the gasification process?	03
	(b) Provide a detailed classification of coal?	04
	(c) Explain proximate and ultimate analysis of coal in detail.	07
	OR	
	(c) What is washing of coal? Describe washability curve in details.	07
Q.3	(a) List applications of solar air heaters.	03
	(b) Advantages and disadvantages of concentrating collectors over flat - plate collectors.	04
	(c) Identify types of concentrating collectors. Describe any one of them in detail?	07
	OR	
Q.3	(a) Draw a block diagram illustrating the basic components of a wind energy conversion system (WECS)?	03
	(b) Advantages and Disadvantages of wind energy conversion systems (WECS).	04
	(c) What is biomass? Classify biogas plants and explain one of them in detail.	07
Q.4	(a) List basic steps involved in biogas generation from biomass?	03
	(b) What factors affect biogas generation?	04
	(c) Discuss materials used for biogas generation and explain the selection criteria for the site of a biogas plant.	07
	OR	
Q.4	(a) Write advantages of closed cycle OTEC system over open cycle OTEC system.	03
	(b) Advantages and disadvantages of geothermal energy	04
	(c) Enlist different geothermal energy resources and explain the heat extraction from hot dry rocks.	07
Q.5	(a) List the various methods of production of hydrogen (H ₂) from different sources.	03
	(b) Explain the principle involved in Magneto Hydro-Dynamic (MHD) power generation	04
	(c) Describe MHD open cycle system. What are the benefits of MHD power generation?	07

OR

- Q.5** (a) Difference between nuclear fission and fusion with an example.
(b) Explain the nuclear fuel cycle.
(c) Explain nuclear waste management in details.

03

04

07
