Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI EXAMINATION – WINTER 2025

Subject Code:3161919 Date:25-11-2025

Subject Name:Energy Conservation and Management

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)	Enlist various schemes of the Bureau of Energy Efficiency (BEE) and its benefits.	**03**
	(b)	Differentiate between primary and secondary sources and state examples of each.	**04**
	(c)	Discuss the sectorial energy consumption of India and the challenges faced by our country in meeting its energy demands and achieving energy security.	**07**
Q.2	**(a)**	Summarize the key features of the Energy Conservation Act 2001 and state its objectives.	**03**
	(b)	Explain Energy Management Information Systems (EMIS) and its role in energy monitoring and targeting for industries.	**04**
	(c)	Define the Energy Conservation Building Code (ECBC) and its significance in promoting energy-efficient building construction.	**07**
		OR	
	(c)	Discuss the provisions of the Electricity Act 2003 related to energy conservation and analyze the impact of the Electricity Act on the Indian power sector for energy security.	**07**
Q.3	**(a)**	List various energy audit instruments used for temperature and pressure data collection and analysis during an audit in process industry.	**03**
	(b)	Explain the concept of the cumulative sum of differences (CUSUM) analysis for detecting changes in energy performance.	**04**
	(c)	Explain the following terms: Simple payback period, return on investment (ROI), net present value (NPV), and internal rate of return (IRR).	**07**
		OR	
Q.3	**(a)**	Explain the role of energy Service Companies (ESCOs) from the energy conservation point of view.	**03**
	(b)	Classify Energy Audit and explain various phases of energy audit.	**04**
	(c)	Explain how energy audits help to identify opportunities for improving the efficiency of lighting systems.	**07**
Q.4	**(a)**	Enlist various energy conservation techniques for industrial furnaces.	**03**
	(b)	Explain the direct and indirect methods of boiler efficiency evaluation.	**04**

	(c)	Enlist various energy conservation techniques for central air conditioning Plant.	**07**

OR

Q.4	**(a)**	Explain the importance of insulation in steam pipes. List common insulating techniques for steam pipes.	**03**
	(b)	Explain networking and Pinch analysis for heat exchanger performance evaluation,	**04**
	(c)	Differentiate between cogeneration and Trigeneration techniques.	**07**
Q.5	**(a)**	What is the Prototype Carbon Fund, and what are its objectives?	**03**
	(b)	Discuss the significance of the UNFCCC in addressing global climate change challenges.	**04**
	(c)	Explain the objectives of the Clean Development Mechanism and discuss how the CDM promotes sustainable development and greenhouse gas emission reductions.	**07**

OR

Q.5	**(a)**	Explain the objectives of Bachat Lamp Yojna.	**03**
	(b)	Assess the effectiveness of the Kyoto Protocol in reducing greenhouse gas emissions and addressing climate change.	**04**
	(c)	With examples explain how the organizations can reduce energy losses and improve process efficiency through better energy management practices.	**07**

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