Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1721107 **Date: 08-12-2014**

Subject Name: Energy Conservation and Management

Time: 02:30 pm - 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.**

Q.1	**(a)**	Define the terms: Payback period, waste heat recovery, energy conservation.	**07**
	(b)	Write a note on current energy scenario of India.	**07**
Q.2	**(a)**	A co-generation plant installation is expected to reduce a companyôs annual energy bill by Rs.24 lakhs. If the capital cost of the new cogeneration installation is Rs.90 lakhs and the annual maintenance and operating costs are Rs. 6 lakhs, what will be the expected payback period for the project?	**07**
	(b)	Define life cycle costing and explain step by step procedure for life cycle costing.	**07**
		OR	
	(b)	List four important duties of energy manager in industry as per Energy conservation act-2001.	**07**
Q.3	**(a)**	What are the different heat loads? Discuss the factors that influence thermal performance of any building.	**07**
	(b)	List the seven important suggestions for energy saving in HVAC motors.	**07**
		OR	
Q.3	**(a)**	What is co-generation? Classify the co-generation systems and explain topping cycle with suitable example and neat sketch.	**07**
	(b)	Enlist the different loads on residential building and Explain how to calculate the cooling load for residential buildings.	**07**
Q.4	**(a)**	Explain energy conservation opportunities in case of fans and lights.	**07**
	(b)	Discuss and explain how to set up an energy management program in any organization.	**07**
		OR	
Q.4	**(a)**	Discuss the use of insulating materials for hot as well as cold insulation.	**07**
	(b)	Write a note on the automatic power factor controllers.	**07**
Q.5	**(a)**	Explain detailed energy audit methodology.	**07**
	(b)	Explain the terms synchronous speed, energy management.	**07**
		OR	
Q.5	**(a)**	List out the types of waste heat recovery devices and explain waste heat recovery through heat exchanger.	**07**
	(b)	Enlist the Energy audit Instruments and explain any three in short with line sketches.	**07**

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