

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 company's 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**
