

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (OLD) EXAMINATION – SUMMER 2019****Subject Code: 171907****Date: 10/05/2019****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.

- Q.1** (a) Write note on 'Indian Energy scenario. **07**  
(b) Define energy security. Enlist different strategies to achieve it and discuss role of energy conservation to achieve energy security. **07**
- Q.2** (a) Define: Power factor, Load factor, Specific heat, Latent heat of fusion, Humidity, Gross calorific value, Relative density **07**  
(b) Give various electricity saving techniques. **07**
- OR**
- (b) Explain various basic electrical parameters to calculate electricity tariff for an industry. **07**
- Q.3** (a) Define energy management. Which are the types of energy audit? Explain detailed energy audit. **07**  
(b) Discuss the role of Energy service companies (ESCOs). **07**
- OR**
- Q.3** (a) Enlist different financial analysis techniques used in energy management. Explain Simple payback period and present value of money method. **07**  
(b) What is the net present value (NPV) of a project for a period of 3 years which requires an investment of Rs.10,00,000 and the benefits received for the first year is Rs. 30000, for the second year is Rs. 50000 and for third year is Rs. 45000. Take interest rate as 8 %. **07**
- Q.4** (a) State key elements of Energy monitoring and targeting system. Also discuss its benefits. **07**  
(b) Explain the importance of CUSUM chart and its procedure to analyze the case with help of diagrams. **07**
- OR**
- Q.4** (a) Which are the cogeneration plants? Explain bottoming cycle with diagram. **07**  
(b) Explain various sources of heat recovery. **07**
- Q.5** (a) Explain in brief Energy efficiency versus Energy conservation. Write step wise procedure to calculate Boiler efficiency. **07**  
(b) Give various tips for energy savings in thermal utility devices like compressor, pump and refrigeration system. **07**
- OR**
- Q.5** (a) What are the characteristics of an Efficient Furnace? Write the formula for evaluating the thermal efficiency by direct method. **07**  
(b) With a neat sketch explain Gas turbine co-generation plant. **07**

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