

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VIII (New) EXAMINATION – WINTER 2019****Subject Code: 2181916****Date: 21/11/2019****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.

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|---|--------------|
| Q.1 (a) Classify energy sources. | 03 |
| (b) Explain in brief Energy security. | 04 |
| (c) Write short note on Indian Energy scenario | 07 |
| Q.2 (a) Define energy management. Explain its benefits. | 03 |
| (b) How BEE help in implementing Energy Conservation Act? | 04 |
| (c) Explain detailed energy audit. | 07 |
| OR | |
| (c) Using the net present value method, evaluate the financial merits of two proposed projects shown in table. The annual rate is 9 % for each project. | 07 |

	Project 1	Project 2
Capital cost	35000	35000
Year	Net annual saving (Rs.)	Net annual saving (Rs.)
1	+7400	+ 6500
2	+6700	+ 6500
3	+6300	+ 6500
4	+6500	+ 6500
5	+6300	+ 6500
6	+6900	+ 6500
7	+6100	+ 6500
8	+6400	+ 6500
9	+6400	+ 6500
10	+6000	+ 6500
Total net saving at end of tenth year	+65000	+65000

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|---|-----------|
| Q.3 (a) Explain significance of energy audit. | 03 |
| (b) Explain the terms: Return On Investment, Time value of money | 04 |
| (c) Discuss in brief Energy conservation Act 2001 and its features. | 07 |
| OR | |
| Q.3 (a) Explain Sensitivity Analysis. | 03 |
| (b) List different energy audit instruments with use. | 04 |
| (c) List financial analysis techniques. Explain any one with its merits and demerits. | 07 |
| Q.4 (a) Compare Net Present Value and Internal Rate of Return. | 03 |

- (b) Discuss Bench marking in detail. **04**
(c) Explain essential elements of Monitoring and Targeting. **07**
- OR**
- Q.4** (a) Explain boiler blowdown with advantages. **03**
(b) Explain how CUSUM chart is drawn with an example. **04**
(c) What are the disadvantages of 'direct method' of boiler efficiency evaluation over 'indirect method'? Write step wise procedure to calculate Boiler efficiency. **07**
- Q.5** (a) Give tips for energy saving in Compressor. **03**
(b) Which are various sources of waste heat recovery? State its advantages. **04**
(c) What do you mean by co-generation? Classify co-generation system & explain bottoming cycle with sketch. **07**
- OR**
- Q.5** (a) Give tips for energy saving in pump. **03**
(b) Discuss the role of Energy Service Companies (ESCOs). **04**
(c) Explain Clean Development Mechanism (CDM). **07**

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