

B.TECH. SEM -VI MECHANICAL 2014 COURSE (CBCS) :
SUMMER - 2018

SUBJECT: Elective-I ENERGY AUDIT & MANAGEMENT

Day: **Monday**
Date: **11/06/2018**

S-2018-2441

Time: **02.30 PM TO 05.30 PM**
Max Marks: 60

N.B:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

Q.1 What is meant by designated companies? Who has designated them? Explain the salient points of energy conservation act, 2001. (10)

OR

Q.1 Describe the need of energy managers with their duties and responsibilities. (10)

Q.2 Draw a process chart to explain the activity of making a telephone call. (10)

OR

Q.2 One thousand kilograms per hour of mixture of benzene (B) and toluene (T) containing 50% benzene by mass is separated by distillation into two fractions. The mass flow rate of benzene in the top stream is 450 kg B/h and that of toluene in the bottom stream to 475 kg T/h. The separation is at steady state. Write balances in benzene and toluene to calculate the unknown component rates in the output stream. (10)

Q.3 Explain the simple payback period criterion for the selection of energy conservation program. What are advantages and limitations of SPP method in implementation in industry? What do you understand from the term discounted payback period? (10)

OR

Q.3 Evaluate the financial merit of proposed projects shown in table. Consider annual discount rate of 7.5% for each project. Use net present value analysis. (10)

Capital cost (₹)	Project -I 1,00,000	Project- II 1,00,000	
	Year	Net annual savings(₹)	Net annual savings(₹)
	1	9500	10,000
	2	9500	8500
	3	9500	8500
	4	9500	8200
	5	9500	8000
	6	9500	7500
	7	9500	7000

Q.4 Explain the different types of losses occurring in electric motors and methods of their improvement. (10)

OR

Q.4 Draw a diagram of 'Power Grid' and explain the associated power losses. (10)

Q.5 Explain the different energy conservation opportunities in boiler systems and heat exchanges. (10)

OR

Q.5 Explain the concept of cogeneration with neat diagram. (10)

Q.6 Explain the roles and responsibilities of energy auditor. (10)

OR

Q.6 Explain the term 'Bench marking'. How is bench marking process in carried out? What are its advantages for energy audit? (10)