

2053
B.E. (Electrical and Electronics Engineering)
Sixth Semester
EE-613: Energy Management and Auditing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) Write electrical billing tariff structure for an industrial consumer.
- b) What are the benefits of improving power factor?
- c) How maximum demand is calculated with the help of load curve?
- d) What is the significance of simple payback period?
- e) Explain the importance of preliminary energy audit. (5x2)

UNIT - I

- II. a) Define energy management. State the basic principles and benefits of energy management.
b) Discuss in brief energy conservation act 2001 and its features. (2x5)
- III. What do you mean by average rate of returns method of financial analysis and explain its advantages. Calculate ARR of a project whose details are given below:-

Year	Investment	Profit
1	80,000	18,000
2	90,000	22,000
3	65,000	24,000
4	60,000	28,000
5	55,000	30,000
6	50,000	32,000

(10)

- IV. Write a note on Benchmarking and force field analysis? Explain how 'Force Field Analysis' act as a tool for achieving goals of energy action planning. Give two examples each of positive and negative forces acting towards achieving goods in an industry. (10)

P.T.O.

(2)

UNIT - II

- V. a) Explain energy audit analysis for illumination system. Explain any five energy management opportunities in lighting systems.
b) Explain principles of automatic power factor controller. (2x5)
- VI. a) What are the effects of harmonic on motor operation and performance? Write the checklist of good maintenance practices for proper motor operation.
b) Explain the functions and benefits of demand controller. How maximum demand control can be practiced in a plant? (2x5)
- VII. During April 2003, the plant has recorded a maximum demand of 600 KVA and average p.f. is 0.82 lag. Minimum average p.f. to be maintained is 0.92 lag and every 1% dip in p.f. attracts a penalty of Rs. 10,000/- in each month.
a) Calculate improvement in p.f. for May 2003 by installing 100 kVAr capacitors.
b) Calculate penalty to be paid if any during May 2003. (2x5)

x-x-x