B.E. (Electrical Engineering (Electronics & Power)) Seventh Semester (C.B.S.)

Elective - I : Energy Management and Audit

P. Pages : 2 **NRT/KS/19/3548**

Time : Three Hours * 0 2 5 5 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.

1. a) Explain the concept of Energy Management with example. **7**

b) What are the energy conservation opportunities in lighting & HVAC systems in buildings? **7**

OR

2. a) How do an industry, nation & globe would benefit from energy efficiency programs? **7**

b) List all the possible energy conservation measures in lighting system. **7**

3. a) What is energy Audit? Explain how the detailed energy Audit is carried out. **7**

b) What are the benefits of benchmarking energy consumption? **6**

OR

4. a) What are the base line data that an audit team should collect. While conducting detailed energy Audit. **7**

b) What is the significance of an energy policy? **6**

5. a) Discuss the procedure followed during energy & mass balance calculation. **7**

b) Two methanol – water mixtures are contained in separate flasks. The first mixture contains 40% weight methanol. The second mixture contains 70% weight methanol. If 200% gm of first mixture is combined with 150 gm of second mixture. What are the mass & composition of the product. **7**

OR

6.	a)	Draw a typical input-output diagram for a process & indicate various energy inputs. Explain the diagram with example.	**7**
	b)	Explain a typical Sankey diagram of preheating furnace.	**7**
7.	a)	Explain in brief the position of energy manager & energy committee in an organization Explain what do you expect as support from top management.	**7**
	b)	Explain the requirements of energy action planning.	**6**

OR

8.	a)	Explain the duties & responsibilities of energy manager.	**7**
	b)	What are the benefits of motivation of employees & their training in Energy management?	**6**
9.	a)	What are the advantages of improving power factor at load side? Explain with example.	**7**
	b)	A 415V, 15kW, 3-Ph, 50Hz induction motor operates at full load with 88% efficiency & 0.85 pF lagging. i) Find current drawn by the motor. ii) If this motor is replaced by 92.5% energy efficient motor with 0.92 p.f. What will be the power savings in terms of kW & KVA?	**6**

OR

10.	a)	What are the major sources of reactive power? Why reactive power compensation is required.	**6**
	b)	What do you understand by demand side Management? How is it carried out?	**7**
11.	a)	Discuss the Heat exchangers.	**7**
	b)	Explain FBC & its applications.	**6**

OR

12.	a)	What is a boiler? How performance evaluation of a boiler is carried out by Direct method?	**7**
	b)	What are the major factors affecting the performance of Industrial furnaces?	**6**

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