VTU B.E/B.TECH QUESTION PAPER SET

CBCS
SEMESTER VI

ENERGY AUDIT AND DEMAND SIDE MANAGEMENT

Use bookmarks to easily navigate between question papers

CBCS SCHEME

USN | | | | | | | | | | | **15EE653**

Sixth Semester B.E. Degree Examination, June/July 2019

Energy Audit and Demand Side Management

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Briefly explain the "Indian Energy Scenario". **(08 Marks)**
b. Define Energy Audit. Compare preliminary audit, with detailed audit. **(08 Marks)**

OR

2 a. Write stepwise methodology of performing an energy audit. **(10 Marks)**
b. Describe the methods to carryout flue gas analysis. **(06 Marks)**

Module-2

3 a. Explain the direct and indirect method of calculating efficiency of a boiler. **(10 Marks)**
b. How can you increase efficiency of fuel fired and electric furnace? **(06 Marks)**

OR

4 a. Explain the method of calculating direct and indirect efficiency of a furnace. **(10 Marks)**
b. Write the classification of boilers. Explain fire tube boiler, with neat sketch. **(06 Marks)**

Module-3

5 a. What is Electrical Load Management? Explain any four load management techniques. **(08 Marks)**
b. With neat sketch, explain thermal energy storage based air conditioning system with advantages. **(08 Marks)**

OR

6 a. Mention the types of air conditioning system. Explain the central air conditioning systems. **(08 Marks)**
b. Why do Technical and Commercial losses occur? Write the methods to reduce technical and commercial losses. **(08 Marks)**

Module-4

7 a. Which are the different losses in electric motor? How they are reduced? **(08 Marks)**
b. Discuss energy saving opportunities in a lighting system. **(08 Marks)**

OR

8 a. Which are the different lighting systems? Explain Mercury vapour and Metal halide lamp, with a neat sketch. **(08 Marks)**
b. What is an energy efficient motor? Where they are used? Mention the limitations in adopting energy efficient motor. **(08 Marks)**

Module-5

9 a. Discuss the steps involved in DAM planning and implementation. **(08 Marks)**
b. Mention the general energy saving tips applicable to new as well as existing buildings. **(08 Marks)**

OR

10 a. What is the role of load management in DSM? Explain the load central techniques. **(08 Marks)**
b. Explain Energy conservation planning. **(08 Marks)**

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15EE653

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Energy Audit and Demand Side Management

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain the Clean Development Mechanism (CDM), Mention its objectives. **(04 Marks)**

b. Describe the steps involved in a detailed energy audit system. With the help of Sankey diagram and bar chart. **(08 Marks)**

c. Mention the different electrical and thermal quantity measuring instruments used by an energy auditor. **(04 Marks)**

OR

2 a. Briefly explain the Indian energy scenario. **(08 Marks)**

b. Explain the following terms :
   i) Simple pay back
   ii) Net present value and Internal rate of return
   iii) Return on Investment
   iv) Life cycle cost method. **(08 Marks)**

Module-2

3 a. What are Boilers? With the help of a neat diagram explain water tube boiler. **(04 Marks)**

b. Explain in detail the methods of calculating efficiency of a boiler by direct and indirect methods. **(08 Marks)**

c. Why the oxygen enrichment is required? Explain in detail. **(04 Marks)**

OR

4 a. What are the different energy saving methods in Electric Fired Furnace? Explain any one of them. **(04 Marks)**

b. Explain in detail the energy saving methods in Boilers. **(08 Marks)**

c. Classify the Furnaces. **(04 Marks)**

Module-3

5 a. Compare constant air volume and variable air volume systems. **(08 Marks)**

b. List and explain the various load management techniques. **(04 Marks)**

c. With a neat diagram, explain the components of a air conditioning system. **(04 Marks)**

OR

6 a. Explain vapour compression Refrigeration cycle. **(04 Marks)**

b. What is Variable Frequency Drive, explain. Justify "VFD is an economical substitution in many applications". **(08 Marks)**

c. What are second and third harmonic distortions, explain what harmful effects to they cause. **(04 Marks)**

Module-4

7 a. Explain the different lighting system. **(04 Marks)**

b. What are energy Efficient Motors? Explain why these motors should be adopted. **(08 Marks)**

c. An Induction motor having 1500rpm synchronous speed is running at 1480rpm. Its nameplate rating is 1475rpm at 25hp. If it draws 18kW, calculate the load is efficiency. **(04 Marks)**

OR

8 a. Write a note on :
i) Ballasts
ii) Fixtures (Luminaries)
iii) Reflectors
iv) Lenses and Louvers. **(08 Marks)**

b. Give the detected explanation on calculating the efficiency of a motor. **(04 Marks)**

c. What are Retrofits? Explain. **(04 Marks)**

Module-5

9 a. What is water Audit? Explain in detail. **(04 Marks)**

b. Write a detailed note on planning and Implementation of Demand side management. **(08 Marks)**

c. What are different Tariff options for DSM? **(04 Marks)**

OR

10 a. Write the different energy saving measures in New Buildings. **(08 Marks)**

b. Write a note on customer acceptance of DSM. **(04 Marks)**

c. Write a note on : "Advantages of Green Buildings" **(04 Marks)**

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15EE653

Sixth Semester B.E. Degree Examination, Aug./Sept. 2020
Energy Audit and Demand Side Management

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain how energy sources are classified give suitable example of each. **(08 Marks)**
b. Briefly explain Indian energy scenario. **(08 Marks)**

OR

2 a. Explain 10-step methodology of detailed energy auditing. **(08 Marks)**
b. Write a note on data acquisition system and data loggers. **(08 Marks)**

Module-2

3 a. Briefly explain energy saving measures in furnace. **(08 Marks)**
b. With a neat diagram explain fire tube boiler. **(08 Marks)**

OR

4 a. Discuss the role of excess air in boiler. **(08 Marks)**
b. Give the classification of furnace. **(08 Marks)**

Module-3

5 a. With a schematic diagram explain the components of air conditioning system. **(08 Marks)**
b. List and explain load management technique. **(08 Marks)**

OR

6 a. Explain the causes and affect of harmonics. **(08 Marks)**
b. Explain energy saving measures in HVAC. **(08 Marks)**

Module-4

7 a. What are the methods used in energy conservation of a motor and explain in brief. **(08 Marks)**
b. Briefly explain different lighting control systems. **(08 Marks)**

OR

8 a. What are the limitations in adopting Energy Efficient Motor (EEM). **(08 Marks)**
b. Discuss the different energy saving opportunity in lighting system. **(08 Marks)**

Module-5

9 a. What is Demand Side Management (DSM) and mention the benefits of DSM. **(08 Marks)**
b. Discuss the methods of energy saving measures in new building. **(08 Marks)**

OR

10 a. Write a note on DSM implementation issues. **(08 Marks)**
b. Discuss the energy saving opportunities in : i) Agricultural sector
ii) Transport sector. **(08 Marks)**

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