

**Elective - I : Energy Management and Audit**

P. Pages : 2

Time : Three Hours



**KNT/KW/16/7464**

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 energy classification based on the following criteria. 7
- i) Primary and secondary energy.
  - ii) Commercial and non-commercial energy
  - iii) Renewable and non-renewable energy
- b) Explain the implications of global warming. 7
- OR**
2. a) How do an industry, nation and globe would benefit from energy efficiency programs? 7
- b) List all the possible energy conservation measures in lighting system. 7
3. a) Distinguish between 'Preliminary energy audit' and 'detailed energy audit'. 7
- b) Briefly explain with examples on fuel and energy substitution. 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 and mass balance calculation. 7
- b) Explain a typical Sankey diagram of preheating furnace. 7

**OR**

6. a) Explain the cogeneration and how it is advantageous over conventional power plant. 7  
b) Explain the principle of operation of heat pipe. Discuss examples of its industrial applications. 7

7. a) Explain in brief the position of energy manager and 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) Briefly explain about 'force field analysis' as tool for achieving goals of energy action planning. Give the examples of positive and negative forces acting towards achieving the goal in industry. 7  
b) Briefly discuss the essential elements of monitoring and targeting system. 6  
9. a) Explain demand side management and the methods of it. 7  
b) Discuss the reactive power management and its necessity. 6

**OR**

10. a) Discuss the parameters to be considered for efficient operation of a fan. 7  
b) Discuss the good maintenance practices for proper motor operation. 6  
11. a) Discuss the general fuel economy measures in furnaces. 7  
b) Explain the energy conservation measures in Boilers. 6

**OR**

12. a) Discuss the Heat exchangers. 7  
b) Explain FBC and its applications. 6

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