

B.E. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester - VIII  
**OEC-4-2 - Electrical Energy Conservation and Auditing**

P. Pages : 2

Time : Three Hours



**GUG/S/23/14350**

Max. Marks : 80

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- Notes :
1. All questions carry equal marks.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.
  5. Answer **five** questions.
  6. Use of a non-programmable calculator is permissible.

1. a) Explain the challenges and opportunity for Energy Security in India. **8**
- b) Define the following with 3 examples each : **8**
- a) Primary and secondary energy,
  - b) Commercial and Non-commercial energy.
  - c) Renewable and Non-renewable energy.

**OR**

2. a) Write short note on Power Sector reform and regulation. **8**
- b) What efforts has been taken by the Government of India to further enhance the production of coal in the country. **8**
3. a) Define the terms: **8**
- a) Temperature,
  - b) Pressure
  - c) Heat and unit of heat
  - d) Specific heat,
  - e) Sensible heat.
- b) Write about the following: Phase change, latent heat of fusion, latent heat of vaporization, latent heat, super heat, dew point, dry bulb temperature, wet bulb temperature, dew point temperature. **8**

**OR**

4. a) Explain various forms of Energy in details. 8  
b) What is high-grade and low grade energy? 4  
c) Define the terms power factor, reactive power active power, and load factor. 4
5. a) Name the instrument required for an Energy audit and explain its working. 8  
b) Explain the different techniques used to conserve the energy consumption. 8

**OR**

6. a) Explain the role of training and awareness in energy management programme. 8  
b) What are the major steps involved in Electrical Energy Audit. 8
7. a) What are the major causes of Harmonics? 8  
b) What are the typical billing components of the two-part tariff structure of industrial utility? 8

**OR**

8. a) Describe the various methods by which we calculate motor loading. 8  
b) Define motor efficiency. Why is it difficult to measure motor efficiency at site? 4  
c) What are the factors influencing the speed of induction motor? 4
9. a) Explain the principle of automatic power factor controller. 8  
b) Explain how maximum demand control works. 8

**OR**

10. a) What are the advantages of energy efficient motors? 8  
b) Explain why centrifugal machines offers the greatest savings when used with variable speed drives. 8

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