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May 2024

B. Tech. (EL) (Fourth Semester)

Electrical Energy Conservation and Auditing

(ELPE-411)

Time : 3 Hours] [*Maximum Marks : 75*

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) How is economic growth linked to energy consumption ? **1.5**

(b) Name five designated consumers under the Energy Conservation Act ? **1.5**

(c) What do you understand by the term calorific value ? **1.5**

(d) What is the significance of knowing the energy costs ? **1.5**

(e) What is an energy audit ? **1.5**

(f) List the factors that affect energy efficiency in air compressors. **1.5**

(g) What are the components of a DG Set System ? **1.5**

(h) What is the function of ballast in a lighting system ? **1.5**

(i) List the factors affecting cooling tower performance. **1.5**

(j) What are the advantages of energy efficient motors ? **1.5**

Part B

2. (a) What are the benefits for industry through implementing energy efficiency programme ? **10**

   (b) Differentiate between energy conservation and energy efficiency. **5**

3. (a) What are the various steps in the implementation of energy management in an organization ? **10**

   (b) Explain briefly the difference between preliminary and detailed energy audits. **5**

4. Explain how maximum demand control works. Explain maximum demand controller with the help of suitable circuit diagram. **15**

5. (a) Briefly describe the methodology of lighting energy audit in an industrial facility. **10**

   (b) List out main factors to be considered for proper sizing of fans. **5**

6. (a) Write down the steps involved in 'Energy Management Strategy' ? **10**

   (b) What are the factors that affect energy efficiency in air compressors ? **5**

7. What are the various methods of pump capacity control normally adopted ? List down few energy conservation opportunities in pumping system. **15**