

Roll No.

Total Pages : 3

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May 2023

**B.Tech. (ME) Re-appear VI SEMESTER
Electrical Energy Conservation and Auditing (ELPE-411)**

Time : 3 Hours]

[Max. Marks : 75

Instructions :

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

PART-A

1. (a) Differentiate commercial and Non-commercial energy. (1.5)
- (b) Define the energy pricing. (1.5)
- (c) What is tariff? (1.5)
- (d) Define demand factor. (1.5)
- (e) What is the significance of an energy policy? (1.5)
- (f) List steps involved in pre-audit phase. (1.5)

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- (g) What are the factors to be considered before procuring fuels for energy efficiency and economics? (1.5)
- (h) What are the few comparative factors need to be looked in to for external bench marking used for inter-unit comparison and group of similar units? (1.5)
- (i) List the energy audit instruments. (1.5)
- (j) Define the term energy efficiency, (1.5)

PART-B

- 2. (a) Discuss in brief Energy Conservation Act-2001 and its features. (8)
- (b) Discuss one energy conversion activity with various losses occurring stage wise. (7)
- 3. (a) Distinguish between Energy conservation and Energy audit based on activities. (7)
- (b) Choose any four-tariff schedule to reduce electricity bill of commercial consumer. (8)
- 4. (a) Define energy management. State the basic principles and benefits of energy management. (8)
- (b) A 3-phase, 415 V, 100 kW induction motor is drawing 50 kW at a 0.75 PF. Calculate the capacitor rating requirements at motor terminals for improving PF to 0.95. Also calculate the reduction in current drawn and kVA reduction, from the point of installation back to the generated side due to the improved PF. (7)

- 5. (a) What is an energy audit? Explain briefly the difference between preliminary and detailed energy audits? (8)
- (b) Define power factor. How it can be improved? What are the benefits of improved power factor? (7)
- 6. (a) Explain the various methods of pump capacity control normally adopted. (8)
- (b) What are the advantages of energy efficient motors? (7)
- 7. (a) List the energy conservation opportunities in a cooling tower system. (7)
- (a) Explain the working of a soft starter and its advantage over other conventional starters. (8)

