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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Electronics &amp; Electrical) (2011 Onwards E-III)/

B.Tech.(Electrical &amp; Electronics) (2013 &amp; Onwards E-III)

(Sem.-7,8)

**ENERGY AUDITING AND MANAGEMENT**

Subject Code : BTEEE-805A

M.Code : 71969

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

**SECTION-A****1. Write briefly :**

- a. Write the name of any four primary energy resources.
- b. Define cash flow in energy management.
- c. Write any two objective of energy management.
- d. Define the tariff in electrical system.
- e. Define capacity assessment in compressed air system.
- f. Write any two factors affecting motor performance.
- g. Define coefficient of performance.
- h. Write any two factors affecting refrigeration and air conditioning system performance.
- i. Write any two types of losses of induction motor.
- j. Define the energy efficient motors.

**SECTION-B**

2. *“Primary energy sources are mostly converted in industrial utilities into secondary energy sources”*. Justify the statement with examples.
3. What do you think of strategies required for mid- term and long-term management of energy resources in India?
4. Mention main provisions (at least three) of the Energy Conservation Act 2001 as applicable to
  - a) Designated consumers
  - b) Standards and labeling
  - c) Energy conservation building codes
5. How ultrasonic flow meters, smart energy meters and combustion gas analyzer are helpful in energy auditing process?
6. Discuss the design of lightning schemes and equipment used for indoor.

**SECTION-C**

7.
  - a) Investment for an energy proposal is Rs. 5 Lakhs. The annual savings for the first four years are Rs. 1.20, Lakhs, Rs. 1.35 Lakhs, Rs. 1.55 Lakhs and Rs.1.80 Lakhs at discounted rate of 10%. Calculate the net present value of the proposal. Also check the feasibility of the proposal.
  - b) Why fresh investments are needed for energy conservation in industries? Which criteria need to be considered when listing investment opportunities?
8. Why benchmarking is considered as a useful tool in organizations for understanding consumption patterns as well as improvement of energy efficiency? Mention summary of energy conservation benchmarking step wise. What are benchmarking parameters of power plant, cement plant, paper plant, textile unit and for a boiler plant needed to be stated for meaningful comparison.
9. Write short notes on the following :
  - a) Vapour compression refrigeration cycle
  - b) Vapour absorption refrigeration system

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**