

Roll No.

Total Pages : 2

BT-8/M-20

38055

ENERGY MANAGEMENT

Paper–ME-430-E

Option–I

Time Allowed : 3 Hours] [Maximum Marks : 100

Note : Attempt five questions in all, selecting at least one question from each Unit. All questions carry equal marks. Unless stated otherwise, the symbols have their usual meaning in the context with the subject. Assume suitably and state, additional data required, if any. Use of steam Tables and Psychrometric Chart is allowed.

UNIT-I

1. Explain in detail, the methodology and measurement of building survey. 20
2. A large warehouse located at an altitude of 1500 m has to be maintained at a DBT of 27 °C and a relative humidity of 50% using a direct evaporative cooling system. The outdoor conditions are 33 °C (DBT) and 15C (WBT). The cooling load on the warehouse is 352 kW. A supply fan located in the downstream of the evaporative cooler adds 15 kW of heat. Find the required mass flow rate of air. Assume the process in evaporative cooler to follow a constant WBT.

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UNIT-II

3. What are the energy management opportunities for lighting systems and heavy electrical systems?
Explain detail with the help of examples. 20
4. A boiler is supplied with feed water at a temperature of 40 °C. The water is converted into steam at a pressure of 8 bar and a temperature of 200 °C. Determine the quantity of heat supplied per kg of steam. Assume specific heat of superheated steam as 2.1 kJ/kgK. 20

UNIT-III

5. Explain in detail, the procedure of Cost analysis of a proposal with the help of an example. 20
6. Write a detailed note on passive cooling and also explain the major issues with the energy storage devices. 20

UNIT-IV

7. Explain in detail, different control systems like Electronic Control System and Digital Control System used in energy management. 20
8. Discuss the various issues with the industrial power management and how CAD/CAM controls are helpful to solve the issues. 20