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MEPS–202

M. E./M. Tech. (Power System) (Second Semester) EXAMINATION, June, 2011

(Grading/Non-Grading)

ENERGY CONSERVATION AND MANAGEMENT

(MEPS – 202)

Time : Three Hours

Maximum Marks : $\begin{cases} GS : 70 \\ NGS : 100 \end{cases}$

Note : Attempt any *five* questions. All questions carry equal marks. Assume suitable data wherever necessary with justification.

1. (a) Draw an energy flow diagram in a plant and explain it briefly.

   (b) What is Energy Audit ? How is energy audit classified and the report for it is prepared ?

2. (a) Define tribo-logical innovations and the role of lubricants in maintenance.

   (b) Discuss the significance of maintenance in energy conservation. Explain the difference between predictive and preventive maintenance.

3. (a) What is DSM ? What is its significance ? What are different DSM techniques ?

   (b) How is payback period calculated when comparing feasibility of energy management techniques ?

4. (a) Explain how the energy efficient motors are different than normal motors.

   (b) An industrial consumer has a load of 300 kW at a p. f. of 0·7 lagging. The tariff is ₹800 per kVA of maximum demand per annum plus ₹3·00 per kWh. The cost of capacitor installation is ₹ 430 per kVAr and the interest and depreciation on it is 15% annually.

   Find :

   (i) The most economical p. f.

   (ii) The capacitor kVAr to improve p. f. to the most economical one.

   (iii) Annual saving due to installation of capacitor

5. (a) What is Co-generation ? Discuss the factors which influence co-generation choice.

   (b) What are the Energy Conservation Equipments ? Explain their role in modern industries.

6. (a) Explain energy monitoring and reporting. Also explain the importance of energy policy with an example.

   (b) Explain waste heat recovery in industry.

7. (a) Discuss thermal energy audit in heating, ventilation and air-conditioning.

   (b) Define the following :

   (i) Energy load curve

   (ii) Cost benefit

   (iii) Internal rate of return

   (iv) Time value of money

8. Write short notes on any *four* of the following :

   (i) Energy auditing instruments

   (ii) Contract demand and Billing demand

   (iii) Energy conservation in textile industries

   (iv) Importance of power factor in energy conservation

   (v) Energy conservation in building