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BIEE-026(S)

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

00338

Term-End Examination

December, 2016

BIEE-026(S) : ENERGY AUDITING AND ANALYSIS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted. Missing data, if any, may be assumed suitably.*

1. (a) List down any five different types of energy efficient retrofits. Explain their application and benefits in brief.

(b) Explain the difference between energy conservation and energy efficiency. State one example where energy costs are reduced but energy consumption goes up. *2×7=14*

2. (a) Discuss the energy conservation measures in electrolytic process.

(b) How does periodical maintenance of motors help in energy conservation ? *2×7=14*

3. (a) Define "Demand Side Management" and state its salient features.

(b) Explain the different types of instruments used in Energy Auditing. *2×7=14*

4. (a) Describe the opportunities for energy conservation techniques in transformers.

(b) Discuss the importance of input-output curves in energy audit. *2×7=14*

5. (a) How can tri-generation be done in chemical industries ? Explain with the help of a flow diagram.

(b) Why do variable torque loads offer greatest energy savings ? Explain electronic methods of speed controllers. *2×7=14*

6. (a) A house is fitted with 10 lamps rated 100 W each, four fans each consuming 0·5 A, an electric kettle of resistance 100 Ω and an electric iron of resistance 121 Ω. If the energy is supplied at 220 V and costs ₹ 3·25 per kWh, calculate the bill for running the appliances for four hours in a day for the month of February 2016.

(b) The annual peak load on a 30 MW power station is 25 MW. The power station supplies load having maximum demands of 10 MW, 8·5 MW, 5 MW and 4·5 MW. The annual load factor is 0·45.

Find :

(i) Average load

(ii) Energy supplied per year

(iii) Diversity factor

(iv) Demand factor $2 \times 7 = 14$

7. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Feeder Loss Evaluation

(b) Energy Accounting

(c) Summer Air-Conditioning

(d) Geothermal Energy

(e) Power Factor Improvement

(f) Compressors and their Applications