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BIEE-026

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

Term-End Examination

00254

June, 2014

BIEE-026 : ENERGY AUDITING AND ANALYSIS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) Discuss the importance of input-output curves in energy audit. *5*

(b) Explain variable speed drives in detail. What are the energy conservation schemes for them ? *5*

2. (a) Explain different co-generation cycles in detail. *5*

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

3. (a) State four types of classification of energy sources with one example for each. *5*

(b) List out the opportunities for energy conservation techniques in transformers. *5*

4. (a) What are constructional (rotor and stator only) and effective operational differences between conventional motor and energy efficient motor ? 5

(b) How does the use of amorphous transformer and dry type transformer minimize the energy usage ? 5

5. (a) How does periodical mentainance of motor help in energy conservation ? 5

(b) Define "Demand Side Management" and state its features. 5

6. (a) What the help of neat labelled diagram explain working of gas-turbine co-generation system and state the area of application. 5

(b) Explain how energy flow diagram helps in energy audit procedure, with the help of suitable example. 5

7. (a) State any five benchmarking parameters followed for either equipment or industrial production. 5

(b) Explain the difference between energy conservation and energy efficiency and state one example where energy costs are reduced but energy consumption goes up. 5

8. (a) Differentiate between renewable and non-renewable energy with examples. 5

(b) Explain the functions and benefits of a demand controller. 5

9. (a) List down any five different types of energy efficient retrofits. Explain their application and benefits in brief. *5*

(b) The core loss of a 50 kVA transformer is 430 W. The copper loss at full-load is 525 W. Calculate the efficiencies at full load and at half load for 0·7 power factor. *5*

10. Write short notes on any ***four*** of the following : $4 \times 2\frac{1}{2} = 10$

(a) Ton of refrigeration

(b) Specific energy consumption

(c) Reactive power

(d) Priming of centrifugal pump

(e) Techno economic analysis

(f) Energy Manager