

**B.Tech. - VIEP - ELECTRICAL ENGINEERING  
(BTELVI)**

**Term-End Examination**

00126

**June, 2015**

**BIEE-026 : ENERGY AUDITING AND ANALYSIS**

*Time : 3 hours*

*Maximum Marks : 70*

---

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

---

1. Describe the electrolytic process with its applications and limitations for the conservation of energy. 7
2. Explain different cogeneration cycles in detail. 7
3. Explain energy efficient control and starting of electric motors. 7
4. Discuss different schemes for energy conservation in lighting. 7
5. How is the electric load analysis for refrigerators carried out ? 7
6. Give a detailed energy analysis for compressors. How can the energy be conserved in this case ? 7

7. A drilling machine, drawing continuously 4 kW of input power and with an efficiency of 50%, is used in drilling a bore in an aluminium block of 5 kg of mass. How much will be the rise in temperature of the block at the end of 100 seconds ?

Assume 30% of the energy imparted to the block is lost to surroundings and the balance is absorbed by the block in its uniform heating. The specific heat of aluminium block = 900 J/(kg K).

7

8. "Energy conservation and energy efficiency are separate, but related concepts." Justify the above statement with suitable examples.

7

9. A boiler uses furnace oil to generate steam. The furnace oil consumption is 50 kg/hr and the total losses in the boiler are 25%. Calculate the amount of steam generated per hour by considering 600 kcal is required to generate 1 kg of steam. Consider GCV (Gross Calorific Value) of furnace oil as 10200 kcal/kg.

7

10. Distinguish between 'preliminary energy audit' and 'detailed energy audit'.

7

11. Consider the ac load as shown in Figure 1.

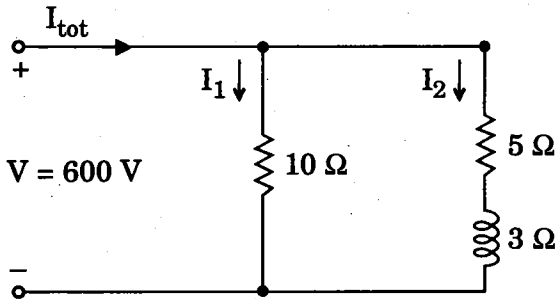


Figure 1

Compute the various powers absorbed in the two load branches.

7

12. Write short notes on any *two* of the following :

$$2 \times 3 \frac{1}{2} = 7$$

- (a) Specific Energy Consumption
  - (b) Feeder Loss Evaluation
  - (c) Energy Audit
  - (d) Power Factor Improvement
-