Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50520

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Eighth Semester

Electrical and Electronics Engineering

EE 8016 – ENERGY MANAGEMENT AND AUDITING

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List out the objectives of energy management.
2. What is meant by energy monitoring and targeting?
3. Define energy cost.
4. Distinguish between contracted demand and billing demand.
5. What is meant by energy efficient motor?
6. What are the components of the energy management program to ensure the success?
7. What is meant by "burden" relevant to instrument transformers?
8. What is smart metering?
9. Define payback period.
10. What is economic models?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the methodology for detailed energy audit process in detail.

Or

(b) Define Energy Auditing. Explain the various steps involved in energy auditing.

12. (a) Explain the loss evaluation of a motor with a numerical example.

Or

(b) Discuss the energy saving recommendations of the transformer and reactor.

13. (a) Explain all the possible energy conservation measures in lighting power consumption conventional 9 Watts loss Tube light Ballast was replaced with 2 Watts loss Electronic Ballást and 40 Watts Tube lights are replaced with 36 Watts tube lights in 750 Nos. of single Lamp Tube light Fittings. The cost of Electronic Ballast and 36 Watts Tube lights are Rs.225 and Rs.45/- per unit. Calculate the power and energy savings potential, if the mill operates for 8000 hours in a year. Also calculated the investment required and payback period for the above ENCON proposal, when the energy cost is Rs.4.50 per kWh

Or

(b) Explain in detail about Fluorescent lamp and also discuss the energy saving opportunities.

14. (a) Analyze the best practices of metering technique with examples.

Or

(b) Discuss various cost factors associated with metering.

15. (a) Explain the different types of economic models used in energy management.

Or

(b) Describe the effects of harmonics on power quality and energy efficiency.

PART C — (1 × 15 = 15 marks)

16. (a) (i) Explain utility rate structures and cost loss evaluation of electricity in detail. (10)

(ii) List down the various opportunities for energy saving in case of under-loaded motors. (5)

Or

(b) Obtain the expression for CT and PT transformer burden and describe with example of meter location and requirements.
