

Harikishore Singh
Government Polytechnic Sheohar

Department of Electrical Engineering
Unit wise Previous Years and Guess Questions

Subject: - *Energy Conservation and
Audit (2020502)*

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Unit 01: Energy Conservation on Basics

1. State the difference between commercial and non-commercial energy sources with example for each.
2. Explain economic aspect; environmental aspect and non-renewable energy aspects of energy conservation.
3. State the importance and need of energy conservation.
4. State salient features of Energy Conservation Act -2001.
5. What is BEE? State the functions of BEE.
6. List conventional and non-conventional energy source.

Unit 02: Conservation in Electrical Machine

1. State needs of energy conservation in electrical motor.
2. State the opportunities for energy conservation technique in transformer.
3. State and explain various methods for energy conservation in 3 phase induction motor in industries.
4. Explain how energy can be conserved in induction motor by improving power quality.
5. Explain the effect of voltage unbalance parameter on three phase induction motor.

6. Explain the effect of harmonic distortion parameter on three phase induction motor.
7. Describe the following energy conservation methods of electrical motor by motor survey.
8. Explain the following energy conservation methods of electrical motor: Matching motor rating with required load.
9. Explain energy conservation technique in induction motor by minimizing the idle and redundant running of motor.
10. Explain energy conservation technique in induction motor by operating induction motor in star mode.
11. Explain why frequent rewinding of induction motor reduces its efficiency.
12. State the method of energy conservation in transformer.
13. Explain parallel operation of the transformer in context of energy conservation.
14. What is energy conservation equipment and list out energy conservation equipment related to lighting system and induction motor.
15. Explain how soft structures helps to conserves energy.
16. State the advantages of soft starter compared to DOL starter.
17. How efficiency of electric motor is improved by using equipment: Power factor controller.
18. State function of Automatic star delta convertor.
19. How efficiency of electric motor is improved by using: Variable frequency drivers?
20. State applications of variable frequency driver.

21. How variable frequency drives is useful in energy conversation.
22. State the significant features of Energy efficient motor
23. State advantages of energy efficient motors as compared to conventional motors.
24. State the methods of energy conservation in transformer.
25. Explain working of amorphous core transformer.
26. Explain the use of amorphous metal.
27. How efficiency of transformer can be improved by amorphous core? State the reason?
28. Explain advantage and disadvantages of amorphous core in transformer.
29. How efficiency of transformer is improved by Epoxy resin cast material?
30. Epoxy resin transformer are more suitable in hazardous areas. Give reason.

UNIT 03: Energy Conservation in Electrical

1. Explain scenario of transmission and distribution losses at national level.
2. State and explain technical losses in transmission and distribution systems.
3. State techniques to reduce technical losses in Transmission and distribution system.
4. Explain the following energy conservation technique:(a) By reducing I^2R losses in Trans. System.
5. What is system voltage optimization and phase current balancing?
6. Explain how balancing of phase currents conserve energy in transmission line.
7. What is phase balancing system? Explain how it is used to conserve energy in distribution system.
8. State the current balancing procedure.

9. State benefits of phase balancing.
10. Explain reactive power compensation in Transmission and Distribution system.
11. How energy conservation is takes place in transmission and distribution by: Compensating reactive power flow.
12. Explain how energy can be conserved by reducing commercial losses.
13. Classify commercial losses in transmission & distribution system.
14. State the working principle and operation of APFC and MD controller used in transmission and distribution system.
15. Explain the working principle of automatic power factor controller.
16. State energy conservation techniques in lighting system.
17. Explain how energy conservation can be obtained by replacing light sources (lamp) only.
18. “Use of control gears and sensors help in energy conservation in lighting system”. - Justify.
19. Explain energy conservation method in lighting system by using installation of separate transformer servo stabilizer.
20. What adequate maintenance program is followed for lighting system?
21. List out the energy conservation technique in Fans.

Unit 04: Energy Conservation through Cogeneration and Tariff

1. What is co-generation?
2. Explain the need of co-generation plants helps for energy conservation.
3. Explain classification of cogeneration system on the basis of the sequence of energy use.
4. Describe combined cycle topping cycle scheme of cogeneration with neat diagram.
5. With diagram explain bottoming cycle types of cogenerations.
6. Compare steam and gas type of cogeneration.

7. With a neat diagram, explain back pressure steam turbine co-generation system.
8. Explain with block diagram gas turbine topping co-generation system.
9. State the factor governing selection of Cogeneration.
10. State advantages of cogeneration.
11. Define the term: (a) Electricity duty (b) Connected load (c). Electricity tax (d). Load factor tariff
12. State objectives of tariff system.
13. What are the different types of tariffs? Explain each.
14. Explain two-part tariff with its advantages and disadvantages.
15. Describe maximum demand tariff and power factor tariff.
16. Explain energy conservation by improving load factor.
17. State the advantages of adoption of cogeneration system in a chemical industry.
18. Explain any three types of energy efficient light control device used in energy conservation project.

Unit 05: Energy Audit of Electrical Systems

1. Define energy Audit according to Energy conservation.
2. Define energy Audit. State advantages of energy audit.
3. State various instruments used in energy audit procedure with functions.
4. State any four questionnaires in reference to energy audit.
5. Draw energy flow diagram and state it's three significances.
6. State the difference between "through audit" & "Detailed audit".
7. Explain stepwise the "Detailed energy audit" procedure.
8. Explain with flow chart the Energy audit of an industry.

9. Define & explain the procedure to calculate the payback period. Also state its significance.
10. Define: Simple Payback period.
11. Explain following energy audit instrument and their use: Lux meter.
12. Explain following energy audit instrument and their use: Tri vector meter.
13. How penalty charges are calculated for exceeding contract demand in energy bill?
14. Prepare any eight questions related to energy audit of a shopping mall.
15. Explain general principles for writing better audit report.

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