

**GURU NANAK INSTITUTE OF TECHNOLOGY**  
An Autonomous Institute under MAKAUT  
**2020-2021**  
**ELECTRICAL ENERGY CONSERVATION AND AUDITING**  
**EE 505A**

TIME ALLOTTED: 3 Hours

FULL MARKS: 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**GROUP – A**

**(Multiple Choice Type Questions)**

Answer any *ten* from the following, choosing the correct alternative of each question: **10×1=10**

		Marks	CO No
(i)	The energy management function is generally vested in – a) Senior Management b) One energy manager or co-ordinator c) Distributed among number of middle manager d) (b) & (c) together	1	CO2
(ii)	The objective of energy management includes a) Minimizing energy costs b) Minimizing waste c) Minimizing environmental degradation d) All the above	1	CO1
(iii)	Which of the following is called the secondary air pollutant? a) PANs b) Ozone c) Carbon monoxide d) Nitrogen Dioxide	1	CO3
(iv)	Which one of the following is an objective of tariff: a) Recovery of cost on production of power b) Recovery of capital investment c) Profit gain d) All of these	1	CO4
(v)	Providing information to BEE is the role of energy manager as per – a) Energy Conservation Act 2003 b) Energy Conservation Act 2004 c) Energy Conservation Act 2002 d) Energy Conservation Act 2001	1	CO5
(vi)	Lux meter is used to measure- a) Illumination level b) Sound intensity and illumination level c) Harmonics d) Speed	1	CO3
(vii)	Costs associated with the design, planning, installation	1	CO4

- and commissioning of a project are:
- a) Variable costs
  - b) Capital costs
  - c) Salvage value
  - d) None
- (viii) The pay period is defined as the ratio of
- a) Net investment to the net annual cash flow
  - b) Net investment to the capital cost
  - c) Net annual cash flow to the capital cost
  - d) Net annual savings to the capital cost
- (ix) Reactive power is measured in terms of
- a) kW
  - b) kVA
  - c) kVAR
  - d) None of these
- (x) “The judicious and effective use of energy to maximize profits and enhance Competitive positions”. This can be the definition of:
- a) Energy conservation
  - b) Energy management
  - c) Energy policy
  - d) Energy Audit
- (xi) Energy consumption per unit of GDP is called as:
- a) Energy Ratio
  - b) Energy intensity
  - c) Per capita consumption
  - d) None
- (xii) Power factor of a load can be improved by using
- a) Static capacitors
  - b) Synchronous condenser
  - c) Phase advancer
  - d) All of the above

**GROUP – B**

**(Short Answer Type Questions)**

Answer any *three* from the following: **3×5=15**

		<b>Marks</b>	<b>CO</b>
2.	(a) Discuss about the aims and objectives of Integrated Energy Policy.	2	CO2
	(b) Write about the causes Of Air Pollution.	3	CO4
3.	(a) Briefly discuss about the Cold Storage.	3	CO2
	(b) What is Intermittent Loads ?	2	CO2
4.	(a) Discuss about the Internal Rate of Return.	3	CO2
	(b) What is the reason to determine the Motor Loading.	2	CO3
5.	(a) Write a short note on Solar Water Heaters	3	CO4
	(b) Describe Indian Energy Conservation Act, 2001, as an institutional framework for promoting energy efficiency in various sectors.	2	CO3

**B. TECH/EE/ODD/SEM-V/EE505A/R18/2020-2021**

- |    |     |   |   |     |
|----|-----|---|---|-----|
| 6. | (a) | In a transformer the core loss is 100 W at 40 Hz and 72 W at 30 Hz. Find the hysteresis and eddy current loss at 50 Hz. | 3 | CO4 |
|    | (b) | Write a short note on variable speed drives.  | 2 | CO5 |

**GROUP – C**

**(Long Answer Type Questions)**

Answer any *three* from the following: **3×15=45**

- |     |     |   | <b>Marks</b> | <b>CO No</b> |
|-----|-----|---|--------------|--------------|
| 7.  | (a) | Describe the procedure for different types of energy audit, step by step.                         | 15           | CO2          |
| 8.  | (a) | Discuss the various schemes of Bureau of Energy Efficiency (BEE) for promoting energy efficiency. | 7            | CO3          |
|     | (b) | Discuss different barriers to achieve ideal demand side management (DSM)?                         | 8            | CO1          |
| 9.  | (a) | Explain the Power Drive System (PDS) & write about the gear purpose in motor.                     | 5            | CO4          |
|     | (b) | Briefly explain the Load Matching And Selection Of Motors process.                                | 7            | CO5          |
|     |     | Write about the efficient control strategies of pump or fan.                                      | 3            | CO5          |
| 10. | (a) | Briefly describe about the Losses in Distribution & Transmission Lines.                           | 5            | CO3          |
|     | (b) | What is Cogeneration? Briefly explain.  | 5            | CO4          |
|     | (c) | What is Air Condition system? Discuss.  | 5            | CO5          |
| 11. | (a) | Briefly describe the various types of electricity tariff types.                                   | 10           | CO2          |
|     | (b) | What is Load Profiling? Explain.  | 5            | CO3          |