

**MASTER OF SCIENCE  
(RENEWABLE ENERGY AND  
ENVIRONMENT) (MSCRWEE)**

**Term-End Examination**

**December, 2025**

**MRW-004 : ENERGY MANAGEMENT**

*Time : 3 Hours*

*Maximum Marks : 70*

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**Note :** (i) Attempt any **seven** questions.

(ii) All questions carry equal marks.

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1. (a) Discuss the elements of energy management in brief. 5
- (b) Write a short note on demand side management. 5
2. (a) What is power factor and how can it be improved? 5
- (b) Explain the open circuit and short circuit test of single phase transformer. 5

3. (a) Discuss the nature and scope of energy audit. 5
- (b) What are the steps involved in detailed energy audit ? 5
4. (a) What are the good housekeeping measures ? 5
- (b) How do we decide size of evaporative cooler needed for a room ? Explain the reason for lowering of temperature by evaporation. 5
5. (a) What is thermodynamic equilibrium ? Write the comparison between system and control volume. 5
- (b) Define the following : 5
- (i) Path function
- (ii) Cycle
- (iii) Intensive property
6. (a) What are the multipurpose application of exergy analysis ? 5
- (b) What are the needs and scope for waste heat recovery ? 5

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7. (a) What are the benefits of heat recovery system ? 5  
(b) Discuss the scope of energy conservation in steel industry. 5
8. (a) What are the main components and characteristics of a cogeneration (CHP) system ? 5  
(b) Discuss the important technical parameters for cogeneration. 5
9. (a) Describe the Kirchhoff's voltage and current law. 5  
(b) Draw and explain the single line diagram of a typical power system. 5
10. Write short notes on any *two* of the following : 5+5
- (a) Starting methods of induction motor
  - (b) Methods of earthing
  - (c) Thermoelectric energy conversion
  - (d) Second law of thermodynamics

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