

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

Term-End Examination

June, 2025

MRW-004 : ENERGY MANAGEMENT

Time : 3 Hours

Maximum Marks : 70

Note : Attempt any **seven** questions. All questions carry equal marks.

1. (a) Explain the various principles of energy management. 5
- (b) What is the significance of energy for national economic development ? 5
2. Differentiate between any *four* of the following : $4 \times 2.5 = 10$
 - (a) Economic technology and Provident technology

- (b) Renewable and Non-renewable resources of energy
 - (c) Isothermal and Isobaric process
 - (d) Energy consumption and Specific energy consumption
 - (e) Active power and Reactive power
 - (f) Star and Delta connection of three-phase system
3. (a) What is the need for an energy audit ? 5
- (b) How will you perform preliminary energy audit of home ? Discuss. 5
4. (a) Are evaporative coolers suitable for all climates ? Justify your answer. Discuss the advantages of evaporative coolers as compared to air conditioners. 5
- (b) Explain the second law of thermodynamics. Discuss its applications. 5
5. (a) What are the exergy efficiencies, loss of exergy and irreversibility ? 5

- (b) Discuss the advantages and limitations of exergy analysis. 5
- 6. (a) Discuss the nature, broad sources and concept of waste heat recovery. 5
- (b) What are the different types of commercial waste heat recovery equipment used in industries ? Discuss them. 5
- 7. (a) Write the classification of cogeneration systems. 5
- (b) Discuss the factors influencing cogeneration choice. 5
- 8. (a) Draw the I-V characteristics of ideal and practical voltage and current sources. 5
- (b) What is transformer ? Discuss its basic principle and construction features. 5
- 9. (a) Describe various components of LT switchgear. 5
- (b) Describe the working principle of a three-phase induction motor. 5

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