

**MASTER OF SCIENCE
(RENEWABLE ENERGY AND
ENVIRONMENT) (MSCRWEE)
Term-End Examination
June, 2026**

MRW-001 : ENERGY CONVERSION

Time : 3 Hours

Maximum Marks : 70

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

(ii) All questions carry equal marks.

1. (a) Write down the application of Engineering Science to Energy Conversion Systems. 5
(b) Write a note on Photo Electric Energy Conversion. 5
2. A DC motor of 5 HP draws a current of 20 amp from a 400 V source when it runs at a speed of 1000 rpm. If the total losses of motor are 1 kW, find shaft torque and efficiency of motor. 10

3. Explain the strategy used for optimisation of Power Generating System. Calculate life cycle cost of standalone PV system. 10
4. (a) Draw and explain indicator diagrams of 2 stroke and 4 stroke Otto Engine. 5
(b) Discuss Pressure Velocity Compounded Impulse Turbine. 5
5. Derive the expression for steady state energy balance equation for nozzles considering the heat loss/transfer as negligible for system. 10
6. Write down advantages and disadvantages of Parallel Flow Jet Condenser. 10
7. Explain thermodynamic cycle of regeneration and reheat process for Gas Turbine Power Plant. 10
8. (a) Explain the methods by which octane no. of fuel can be calculated. 5
(b) Discuss stoichiometric analysis for combustion. 5

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9. (a) Write a note on Wind Electric Power generation. 5
- (b) Explain the types of coal ash and their origin process. 5
10. Write short notes on any *four* of the following : $4 \times 2.5 = 10$
- (i) Electrostatic Precipitation
 - (ii) Fly ash and its characteristics
 - (iii) Classification of Water Turbines
 - (iv) Penstocks
 - (v) Peak Load Hydel Power Plants
 - (vi) Composition of Crude Petroleum

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