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MRW-001

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

Term-End Examination

December, 2024

MRW-001 : ENERGY CONVERSION

Time : 3 Hours

Maximum Marks : 70

Note : (i) Answer any **five** questions.

(ii) All questions carry equal marks.

1. (a) Explain the following electrical power generating systems : 7
 - (i) Coal fired thermal power plant
 - (ii) Nuclear power plant
- (b) Which type of DC motor is used in railway traction ? Also explain the reason for selecting a particular type of motor. 7

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2. (a) Draw the neat schematic arrangement of a simple open cycle gas turbine power plant. With the help of its characteristic, explain the working. 7
- (b) Explain the working principle of Parson turbine and Rateau turbine. 7
3. (a) Explain stoichiometric analysis for combustion of liquid fuels. 7
- (b) What is the cracking in the chemical processes ? Also, explain different methods of cracking. 7
4. (a) Explain the working of fluidized bed boiler with a neat schematic diagram. 7
- (b) Explain the principle of operation of two-stroke diesel engine showing different strokes in the cycle with the help of a neat diagram. 7
5. (a) Explain how photovoltaic (PV) power generating system can be used to meet energy requirement of rural area. 8

- (b) Explain the following : 6
- (i) Fuel-air ratio
 - (ii) Overleaning and overriching
 - (iii) Compression ratio
6. (a) Discuss proximate and ultimate analysis of coal. Explain how water content of coal is determined. 7
- (b) Explain the construction and working principle of solar still with the help of a neat schematic diagram. 7
7. Write short notes on any *two* of the following : $2 \times 7 = 14$
- (a) Thermo-electrical Energy conversion
 - (b) Selection of site for hydroelectric power plant
 - (c) Equipment for coal ash handling

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