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MRW-001

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

(MSCRWEE)

Term-End Examination

June, 2023

MRW-001 : ENERGY CONVERSION

Time : 3 Hours

Maximum Marks : 70

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

(ii) *Each question carries equal marks.*

(iii) *Use of scientific calculator is permitted.*

1. (a) Why do we need energy conversion ?
What are the various modes of energy
conversion ? 5

P. T. O.

- (b) A 4-pole, lap wound D. C. generator is used to run at a speed of 1000 rpm. It has flux/pole of 0.02 Wb/m^2 and 600 conductors. Find the voltage generated by the generator. 5
2. (a) Discuss the process of flameless combustion. 5
- (b) Explain the application of combustion principle to gaseous fuels. 5
3. Distinguish between any *two* of the following :
5 each
- (a) Renewable energy and non-renewable energy
- (b) Built in storage solar water heater and shallow solar pond water heater.
- (c) De laval turbine and Parsal turbine
4. (a) Explain the working principle of pressure velocity compounded turbine. 5
- (b) Explain the working principle of surface jet condensor. 5

5. (a) What are the benefits of regenerator in gas turbine power plant ? 5
- (b) Explain Gas cycle using intercooling with the help of P-V diagram. 5
6. (a) Write the characteristics of any *two* manufactured solid fuels. 5
- (b) Describe the knocking and anti-knocking characteristics of fuel. 5
7. (a) Explain the Hee's law of constant heat summation. 5
- (b) Describe the various strokes of a four-stroke I. C. engine with a neat sketch. 5
8. (a) What are the essential characteristics for the selection of site for hydroelectric power plants ? 5
- (b) Describe the process of wind electric power generation. 5

9. Write short notes on any *four* of the following :

4×2.5=10

- (a) Avagadro's law
- (b) Proximate analysis of coal
- (c) Magnetohydrodynamic power generation
- (d) Constant head curves
- (e) Benson boiler
- (f) Flame temperatures