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**MRW-005**

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

**Term-End Examination  
December, 2023**

**MRW-005 : SOLAR ENERGY AND APPLICATIONS**

*Time : 3 Hours*

*Maximum Marks : 70*

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

(ii) All questions carry equal marks.

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1. (a) Define the terms emissivity and intensity of radiation. 7
- (b) Describe I-V and P-V characteristics of a solar cell. 7
2. (a) Calculate the daily load for domestic use and find how many 35 Wp PV panels are required in the array. What is daily power requirement ? 7
- (b) Draw the diagram of stand-alone solar PV system configuration which can be used for supplying DC and AC loads. Explain its working with salient features. 7

**P. T. O.**

3. (a) State the factors affecting the performance of solar PV system. 7  
(b) Write different applications of solar water pumpset. Write three do's and don'ts of maintaining a solar water pump. 7
4. (a) Explain the thermal performance of flat plate solar water heaters. 7  
(b) Explain the basic principles of designing of solar passive building. 7
5. (a) What do you mean by green buildings ? What are the advantages of green buildings ? 7  
(b) Enlist the various characteristic parameters of a drying/dehydration of any agricultural product. 7
6. (a) Describe the phenomenon of global warming. 7  
(b) Discuss the various factors responsible for greenhouse effect. 7
7. Write short notes on any **four** of the following :  $4 \times 3\frac{1}{2} = 14$ 
  - (a) Main features of solar still
  - (b) Types of solar cookers
  - (c) Stefan-Boltzmann and Kirchhoff's law of thermal radiation
  - (d) Construction of solar module
  - (e) Principles of solar air heating systems
  - (f) Solar lantern and solar street lighting system.