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MRW-005

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

Term-End Examination

December, 2024

MRW-005 : SOLAR ENERGY AND APPLICATIONS

Time : 3 Hours

Maximum Marks : 70

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

1. Distinguish between any *four* of the following :

3 × 4 = 12

- (a) Solstice and Equinox
- (b) Solar time and Standard time
- (c) Bypass diode and Blocking diode
- (d) Rankine cycle and Brayton cycle
- (e) Passive solar green house and Active solar green house
- (f) Ongrid PV system and Offgrid PV system

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2. (a) Explain the basic parameters and characteristics of a solar cell.
- (b) Discuss the major losses in a PV array system. 7+7=14
3. (a) Explain flat plate collector with the help of a neat sketch.
- (b) State the salient features of the following inverters in the grid connected solar PV system :
- (i) Central inverter
- (ii) String inverter
- (iii) Microinverter 7+7=14
4. (a) With the help of a block diagram, explain the various components of stand alone solar PV system.
- (b) Explain the installation and commissioning of solar water pumping in detail. 7+7=14
5. (a) Discuss the importance of ventilation in heating and cooling of buildings.
- (b) Discuss the building integrated Solar PV Technology in detail. 7+7=14

6. (a) Explain the principle of solar still and discuss the methods of increasing distillate output.
- (b) State the *four* important differences in solar PV and conventional grid electricity.

7+7=14

7. (a) What is green house effect ? Discuss any *five* steps which could be followed to reduce the effect of green house.
- (b) Describe the working and application of a solar cabinet dryer.

7+7=14

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

3.5×4=14

- (a) Community solar cooker
- (b) Evacuated tube collector
- (c) Solar lantern
- (d) Solar powered traffic signal systems
- (e) Power Generation of Parabolic trough collector

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