No. of Printed Pages : 4

# MRWE–001

## MASTER OF SCIENCE

## (RENEWABLE ENERGY AND ENVIRONMENT) (MSCRWEE)

## Term-End Examination

## December, 2025

### MRWE-001 : NANOTECHNOLOGY IN ENERGY AND ENVIRONMENT

*Time : 3 Hours* *Maximum Marks : 70*

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

*(ii) All questions carry equal marks.*

1. (a) What do you understand by Nano-technology ? List out its various advantages and limitations. 5

(b) What is synthesis of nanomaterials ? Discuss the various properties of nanomaterials. 5

2. (a) What are the nanomanufacturing methods ? Explain any *one* method in brief. 5

(b) Differentiate between SEM and TEM. 5

3. (a) What is Battery ? How is nano-technology applied in battery ? List out the applications of battery. 5

(b) What is nanowire ? What are the methods of producing nanowire ? List out its applications. 5

4. (a) Explain the role of nano-technology in solar cell and list its applications. 5

(b) Explain solar power generation mechanism with a neat sketch. 5

5. (a) What is Electronic Nose ? List out its applications. 5

(b) Describe the integration and performance of micro-fuel cell system. 5

6. (a) Explain the working of hydrogen storage system with suitable diagram. 5

(b) What are the various techniques used in Silicon (Si) deposition ? Explain any *one* technique. 5

7. (a) Explain the working of micro-fluid system with a suitable diagram. List out its applications. 5

(b) Explain the working of NP-based electrochemical sensor. 5

8. (a) What is Nanosensor ? How the Nanosensors are used to monitor the various environmental factors ? 5

(b) How is the environment monitored and purified through small water particles ? Explain in brief. 5

9. Write short notes on any *two* of the following : 5+5

   (a) Top-down Approach

   (b) NEMS

   (c) Green House Effect

   (d) Pollution Abatement

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