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MRWE–001

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

Term-End Examination

December, 2024

**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 the term 'Nanotechnology' ? Briefly describe the basic concept of nanotechnology with suitable illustration. 5
- (b) Explain the working of scanning transmission microscope with a suitable diagram. 5

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2. (a) Describe nanosize and nanoscale with suitable examples. 5
- (b) How are nanomaterials synthesised ? Discuss the various properties of nanomaterials. 5
3. (a) Describe top-down and bottom-up approach with suitable sketch. 5
- (b) What is Nanobot ? List out the various applications of nanobot. 5
4. (a) Explain applications of nanotechnology in solar energy. 5
- (b) Define Micro Electro Mechanical Systems (MEMS) and Nano Electro Mechanical Systems (NEMS). List out their applications. 5
5. (a) Explain the working of fuel cell and list out its applications. 5
- (b) What is Energy Conversion Process ? Explain single stage and multistage energy conversion process. 5

6. (a) Describe various methods of hydrogen storage. 5
- (b) What is Electronic Nose ? List out its applications. 5
7. (a) How are the various environmental factors monitored using sensors ? 5
- (b) Explain the application of Nanoscale Biopolymer in waste treatment. 5
8. (a) What is Remediation ? How is remediation process applied in water treatment ? 5
- (b) Discuss the various applications of Nanotechnology in environment. 5
9. Write short notes on any **two** of the following :
5+5
- (a) Carbon Nanotubes
- (b) Pollution Abatement
- (c) Green processing
- (d) Nanocomposite materials

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