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MRWE–001

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

Term-End Examination

December, 2023

**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) Define Nanotechnology and discuss its future and challenges. 5
- (b) Explain the working of Scanning Electron Microscope with a suitable diagram. 5
2. (a) What is synthesis of Nanomaterials ? Discuss the various properties of Nanomaterials. 5

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- (b) What is Nanomachine ? Discuss its various applications. 5
3. (a) What is Battery ? How is Nanotechnology applied in Battery ? List out the applications of battery. 5
- (b) Explain the Nano-Microsilicon composite structures. 5
4. (a) What is sputtering ? Explain the process of sputtering with a suitable diagram. 5
- (b) What are the Materials used for manufacturing NEMS devices ? List out the advantages and applications of NEMS. 5
5. (a) What are the methods to make nanocrystalline or nanoscale metal hydrides ? Explain any *one* method. 5
- (b) What is Electronic Nose ? List out its applications. 5
6. (a) Explain the working of fuel cell and list out its applications. 5

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- (b) What is solar energy storage system ?
What are the types of solar energy storage system ? List out its advantages. 5
7. (a) How are the various environmental factors monitored using sensors ? 5
- (b) How is the pollution reduced by using Nanotechnology and Nanomaterials ?
Explain in brief. 5
8. (a) What is Remediation ? How is Remediation Process applied in Environment ? 5
- (b) Define about Nanomaterials. Discuss its application. 5
9. Write notes on any **two** of the following :
2×5=10
- (a) Nanowire
- (b) NEMS
- (c) Nanocomposite Materials
- (d) Green Processing