

Assignment Booklet

MSCRWEE Programme **M.Sc (Renewable Energy and Environment)**

Third Semester (Compulsory)	
MRW-005	Solar Energy and Applications
MRW-006	Bioenergy Conversion and Utilization
MRW-007	Energy Economics and Planning

Third Semester (Electives)	
MRWE-001	Nano Technology in Energy & Environment
MRWE-002	Energy Storage
MEV-021	Introduction to Climate Change
MEVE-001	Environmental Impact Assessment for Environmental Health
MCS-224	Artificial Intelligence and Machine Learning
MCS-226	Data Science and Big Data
MCS-227	Cloud Computing and IoT
MCS-231	Mobile Computing



SCHOOL OF ENGINEERING & TECHNOLOGY
INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Maidan Garhi, New Delhi – 110 068

JANUARY 2025

Dear Student,

Please read the information on assignments in the Programme Guide that we have sent you after your enrolment. A weightage of 30%, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this Programme. The assignment for MSCRWEE (Third semester) has been given in this booklet.

Instructions for Formatting Your Assignments

Before attempting the assignment, please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ENROLLMENT NO :

NAME :

ADDRESS :

.....

.....

PROGRAMME CODE:

COURSE CODE:

COURSE TITLE:

STUDY CENTRE:

DATE:

**PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE
EVALUATION AND TO AVOID DELAY.**

- 2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.
- 3) Leave 4 cm margin on the left, top and bottom of your answer sheet.
- 4) Your answers should be precise.
- 5) **These assignments submitted should be hand written in your own hand writing.**

We strongly suggest that you should retain a copy of your answer sheets.

- 6) **You cannot fill the Exam Form without** submission of the assignments. So solve it and **submit it at the earliest**. If you wish to appear in the **TEE, June 2025**, you should submit your TMAs by **April 30, 2025**. Similarly, if you wish to appear in the **TEE, December 2025**, you should submit your TMAs by **September 30, 2025**.
- 7) Assignments will be submitted at **your respective regional centre**.

We wish you good luck!

Assignment -2
(To be done **after** studying the course material)

Course Code: MRW-006
Course Title: Bioenergy Conversion and Utilization
Assignment Code: MRW-006/TMA/2025

Maximum Marks: 100

Last Date of Submission: April 30, 2025 (For June TEE), September 30, 2025 (For December TEE)

Note:

- 1. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words.**
 - 2. All questions are compulsory. All questions carry equal marks.**
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| Q.1 | a) Explain in detail the biotic and abiotic degradation of plastic. | 10 |
| | b) Describe the Relationship between Gross National Product (GNP) and Municipal Solid Waste Generation. | |
| Q.2 | Highlight elaborately about the location criteria and data collection of landfill. How to estimate landfill cost based on Preliminary Design? | 10 |
| Q.3 | Mention principle components of enzyme. Describe the factors affecting enzyme activity. | 10 |
| Q.4 | Describe the methods of pyrolysis and combustion & mention the significance of these processes in biomass conversion. | 10 |
| Q.5 | a) Describe supercritical fluid extraction? | 5 |
| | b) Differentiate between ultrasound assisted and pressure assisted solvent extraction. | 5 |
| Q.6 | Define meta genomics. State mathematical model for bacterial growth. | 10 |
| Q.7 | Define bio refining. Discuss about the development and use of process models to predict the economic output of the considered bio refinery process. | 10 |
| Q.8 | Describe the processes of transformation of Biogas into Renewable Natural Gas. | 10 |
| Q.9 | Explain in detail the national hydrogen energy mission. | 10 |
| Q.10 | Write short notes on ANY TWO of the following: | 10 |
| | a) Butanol | |
| | b) Characteristics of fuels utilized in SI engine | |
| | c) Production of Ethanol | |