Assignment Booklet

MSCRWEE Programme

M.Sc (Renewable Energy and Environment)

First Semester	
MRW-001	Energy Conversion
MRW-002	Heat Transfer
MST-001	Foundation of Mathematics and Statistics
MED-003	Energy and Environment

SCHOOL OF ENGINEERING & TECHNOLOGY
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
Maidan Garhi, New Delhi – 110 068

JANUARY 2026

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 wouldconsist of one tutor-marked assignment** for this Programme. The assignment for MSCRWEE (first 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 ANDTO 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 2026,** you should submit your TMAs by **April 30, 2026.** Similarly, if you wish to appear in the **TEE, December 2026,** you should submit your TMAs by **September 30, 2026.**

7) Assignments will be submitted at **your respective regional centre.**

We wish you good luck!

Assignment -1

(To be done **after** studying the course material)

Course Code: MRW-001
Course Title: Energy Conversion
Assignment Code: MRW-001/TMA/2026
Maximum Marks: 100

Last Date of Submission: April 30, 2026 (For June TEE), September 30, 2026 (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.**

Q.1		Identify five household or industrial devices and classify them according to their energy conversion type (electrical, mechanical, chemical, or thermal).	10
Q.2		Explain the process of combustion and describe how it converts chemical energy into thermal energy.	10
Q.3		Compare the efficiency and environmental impact of solar and biomass energy systems.	10
Q.4		Discuss how impulse and reaction turbines differ in design and performance.	10
Q.5	a)	Why is a condenser essential in a steam power plant? Discuss its role in improving cycle efficiency.	5
	b)	Sketch a T–s diagram for a regenerative Rankine cycle and label the key processes.	5
Q.6		Compare open-cycle and closed-cycle gas turbine plants in terms of efficiency and application.	10
Q.7	a)	Prepare a table comparing the advantages and disadvantages of solid, liquid, and gaseous fuels.	5
	b)	Explain the concept of octane and cetane numbers and their importance in engine performance.	5
Q.8		Explain how the First Law of Thermodynamics applies to reacting systems.	10
Q.9		Draw labeled diagrams of a water-tube boiler and a four-stroke engine.	10
Q.10	a)	Discuss the factors influencing the selection of a site for a hydropower plant.	5
	b)	Discuss the environmental and operational issues related to coal ash and fly ash disposal.	5