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 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 (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 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-005
Course Title: Solar Energy and Applications
Assignment Code: MRW-005/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	a)	Explain Planck's law, Stefan Boltzmann law of thermal radiations.	5
	b)	Describe various component of Solar radiation. Discuss and draw spectral energy distribution of solar radiation at extra-terrestrial and terrestrial.	5
Q.2	a)	Discuss the process through which the Earth-atmosphere system maintains heat balance.	5
	b)	Describe basic parameters and characteristics of a solar cell.	5
Q.3	a)	What are the major difference between commercially available mono crystalline and polycrystalline silicon cells?	5
	b)	State various losses in the solar cell and module.	5
Q.4		Explain classification of solar thermal conversion.	10
Q.5		Explain the function of stand-alone solar PV system with and without battery with neat block diagram?	10
Q.6		List the various steps involved in the design of solar PV system.	10
Q.7		What is Solar Photovoltaic thermal (PVT). Explain its function with neat diagram.	10
Q.8	a)	Draw the diagram of wind- solar PV hybrid system and explain its working.	5
	b)	What are the key points to be considered during the operation of Solar Water Pump?	5
Q.9	a)	Explain the working principles of Solar Air Heating Systems.	5
	b)	Describe the concept of direct gain heating and cooling of solar passive buildings.	5
Q.10	c)	Describe the functioning of a solar dryer. Explain dehydration of Onion.	5
	d)	Explain Green Building. Are green buildings environment friendly.	5