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 -3

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

Course Code: MST-001
Course Title: Foundation of Mathematics and Statistics
Assignment Code: MST-001TMA/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 and for a 20 mark question it is above 500 words.**

2. **All questions are compulsory. Marks for the questions are shown within brackets on the right-hand side.**

Q.1 State whether the following statements are True or False. Give a reason in support of your answer.

a) Between any two different irrational numbers there is another irrational number. 2

b) $\int_{10}^{10}(x^{11}+x^{21}+x^{31})\text{dx} = 0$ 3

c) $\begin{vmatrix} p & x & q+r \\ q & x & r+p \\ r & x & p+q \end{vmatrix}=0$ 3

d) The range of the data shown in the following frequency distribution is 350. 2

Classes	20-25	25-30	30-35	35-40	40-45	45-50	50-55
Frequencies	0	7	3	8	4	0	0

Q.2 a) A carpenter was hired to build 320 window frames. The first day he made five frames and each day thereafter he made two more frames than he made the day before. How many days he will take to finish his job? 5

b) Set having values $\frac{1}{2}, \frac{1}{2^2}, \frac{1}{2^3}, \frac{1}{2^4}, \frac{1}{2^5}, \frac{1}{2^6}$ ... ... is countable. 5

Q.3 How many different signals are possible with 5 blue, 4 red, 3 white and 2 green flags by using all at a time in a queue? 10

Q.4 Discuss the continuity and differentiability of the following function at x = 5. 5+5

$$f(x) = \begin{cases} |x-5|, & x \neq 5 \\ 0, & x = 5 \end{cases}$$

Q.5 Evaluate the integrals: $\int \frac{1}{(x-2)(x^2+4)}\,dx$ 10

Q.6 Find values of x, y and z given that 10

5x+y+ z = 36

x+y+z = 16

10x+2y+2z = 72

You are bound to use the matrix techniques to solve the given equations.

Q.7 Write any 5 principles of data visualization 20

Q.8 Write whether the following data are discrete or continuous. Give reason in support of your answer. 20

a) Number of children in a family in a colony of 1000 families.
b) Number of pages in each of the 50 books having some mistake.
c) Height of students of IGNOU who enrolled in 2021.
d) Waiting time of metro when a person reaches metro station.
e) Monthly income of the family.