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 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 tutormarked 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	Г NO :
Ν	JAME :
ADDI	RESS :
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.

- 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 -3

(To be done after studying the course material)

Course Code: MST-001 Course Title: Foundation of Mathematics and Statistics Assignment Code: MST-001TMA/2025 Maximum Marks: 100 Last Date of Submission: April 30, 2025 (For June TEE), September 30, 2025 (For December TEE)

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.

Note:

- 2. All questions are compulsory. Marks for the questions are shown within brackets on the righthand side.
- Q.1 State whether the following statements are True or False and also give the reason in support of your answer. a) Collection of rich persons in India forms a set. 2 2 b) Following rule is a function from A to B. X1 . 2 c) $\frac{d}{dx}(9-7x)^5 = 45(9-7x)^4$ 2 d) In exclusive method, upper limit of a class is included in the same class. e) The order of the matrix $\begin{bmatrix} 2 & 5 & 6 \\ 4 & 3 & 1 \end{bmatrix}$ is 3×2 . 2 If four cards are chosen from a pack of 52 playing cards then find the Q.2 a) number of ways that all four cards are: 2 a) of same suit 2 b) red c) face cards 2 2 d) king 2 e) of different suit Q.3 Arrange the numbers 49, 36, 42, 19, 22, 27, 14, 13, 24, 48, 23, 28, 17, 42, 10 39, 45, 22, 24, 17, 41, 18, 42, 38, 43, 11, 27, 36, 13, 40, 30, 24, 10, 18, 47, 18, 19, 23, 12, 27 in stretched stem-and-leaf display that has single-digit starting parts and leaves, but has stem width of 5. Q.4 If the universal set is $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ and $A = \{2, 3, 6, 7\}$, $B = \{4, 3, 7\}$, 6, 8, C = $\{6, 7, 8\}$ are the subsets of U, then verify a) De-Morgan's laws 5 b) left distributive law 5 Q.5 Evaluate the following: a) $\int x^2 e^{2x} dx$ 5

b)
$$\frac{dy}{dx}$$
, where $y = (4x + 5)^4 (9x + 4)^5$
a) Prove that $\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = (a + b + c)(ab + bc + ca - a^2 - b^2 - c^2)$
b) What do you mean by primary data and secondary data? Also give an example in each case.

Q.7 Draw a box plot with whisker, +ve sign and outliers for the following data: 20 42, 37, 28, 23, 32, 25, 26, 39, 38, 41, 22, 38, 21, 31, 26, 36, 42, 52, 50, 47, 24, 53, 28

Q.8 a) Find the values of **a** and **b**, if the function **f** given below is continuous at x=2 8 $f(x) = \begin{cases} a+b & x < 2\\ a+bx+4, & x=2\\ 5, & x > 2 \end{cases}$

b) Draw a histogram for the following data:

Draw a mstogram for the following data.									
Wages	40-49	50-69	70-99	100-109	110-119				
No of workers	2	20	60	35	4				

12

Also draw frequency polygon in the same graph

Q.6