

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 would consist 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 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 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 -2

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

Course Code: MRW-002

Course Title: Heat Transfer

Assignment Code: MRW-002/TMA/2026

Maximum Marks: 100

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

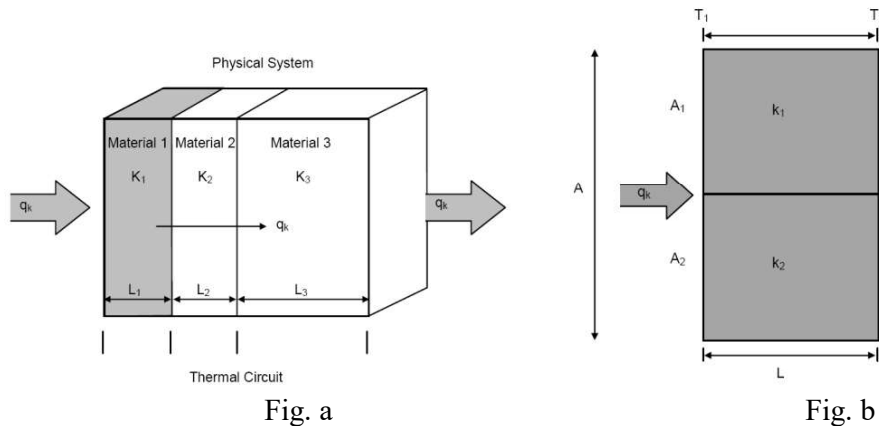
Note:

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. Marks for the questions are shown within brackets on the right-hand side.

Q.1 Discuss the various modes of heat transfer in detail. 10

Q.2 Derive the expression for heat conduction through a cylinder. Assume suitable dimension of the cylinder and the temperature difference across the cylinder. 10

Q.3 Derive the expression for thermal resistance for the composite plane wall shown in Figures given below. Assume area of cross-section to be 'A' for the Fig. a. 10



Q.4 Derive the expression for overall heat transfer co-efficient. 10

Q.5 Derive the expression for critical radius of insulation for a cylindrical tube and explain its significance. 10

Q.6 Define the following dimensionless numbers 10

- a) Nusselt number
- b) Peclet number
- c) Prandtl number
- d) Rayleigh number
- e) Reynolds number

Q.7 Define the following: 10

- a) Radiosity
- b) Absorptivity
- c) Reflectivity

d) Transmissivity

e) Spectral Intensity

- Q.8 Derive the expression for shape factor for radiation emitting from a surface 'i' and reaching the surface 'j'. 10
- Q.9 How are the heat exchangers classified? Describe any one gas to liquid type heat exchanger. 10
- Q.10 Compare a straight tube and bent tube boiler with neat sketches while enlisting the advantages and disadvantages. 10