

Assignment Booklet

BSCAEY Programme B.Sc (Applied Sciences - Energy)

Third Semester	
BEY – 004	Zero Emission Vehicles
MST – 003	Probability Theory
BEY – 015	Data Analysis with R and Python
BEYE – 023	Stories from Indian Epics, Puranas and Siddhanta(s)
BEYE – 024	Hindi ka Rashtriya evam Sanskritik Kavya



**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 BSCAEY (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 -3

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

Course Code: BEY-015

Course Title: Data Analysis with R and Python

Assignment Code: BEY-015/TMA/2026

Maximum Marks: 100

Last Date of Submission: May 31, 2026 (For June TEE), September 30, 2026 (For December TEE)

Note:

1. All questions are compulsory.

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|------|--|----|
| Q.1 | Differentiate between List and Tuple in Python. Compare them based on mutability, memory usage, performance, and applications with examples. | 10 |
| Q.2 | Explain the string data type in Python, discussing string operations such as indexing, slicing, and commonly used string methods with suitable examples. Also, explain conditional statements in Python and describe the if, if-else, and elif statements with examples and their use cases. | 10 |
| Q.3 | List out operators in Python with suitable example in python code. | 10 |
| Q.4 | Explain functions in Python. Distinguish between built-in and user-defined functions with examples and Write a Python program to find the largest of three numbers using a user-defined function and explain the logic. | 10 |
| Q.5 | Explain file handling in Python. Describe different file modes and write a program to read data from and write data to a file. And explain modules and packages in Python. Describe their importance and usage with suitable examples. | 10 |
| Q.6 | Explain the features and applications of the R programming language. Discuss why R is widely used in data analysis and statistics, and explain the basic data types in R by describing numeric, character, and logical and complex data types with suitable examples. | 10 |
| Q.7 | Explain vectors, data frames and matrices in R. Describe their creation, operations, accessing elements, manipulation operations and applications with examples. | 10 |
| Q.8 | Explain control statements in R. Describe conditional and looping statements with suitable examples. | 10 |
| Q.9 | Explain functions in R. Write a user-defined function and explain how arguments and return values work. And explain the apply family of functions in R with suitable examples. | 10 |
| Q.10 | Explain file handling in R. Describe reading and writing data using CSV and text files with examples. And Write an R program to create a bar chart and pie chart and explain the graphical output. | 10 |