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 wouldconsist 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 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: BEY-004
Course Title: Zero Emission Vehicles
Assignment Code: BEY-004/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.**
2. **Each answer should be 300–400 words and include examples, illustrations, or case references.**

Q.1	Analyze the challenges and benefits of India's target to achieve 30% EV sales penetration by 2030.	10
Q.2	Explain how modern emission control technologies (EGR, TWC, SCR, DPF) have transformed vehicle emission standards globally.	10
Q.3	Discuss the significance of fuel-air mixture preparation and ignition control in achieving low-emission combustion.	10
Q.4	Analyze how hydrogen-based propulsion compares with battery-electric systems in terms of efficiency and sustainability.	10
Q.5	Discuss the major factors affecting battery performance, life cycle, and sustainability.	10
Q.6	Analyze how battery management systems (BMS) contribute to battery safety and long-term reliability.	10
Q.7	Explain the role of inverters, converters, and motor control units (MCUs) in optimizing EV performance.	10
Q.8	Discuss how hybrid vehicle architecture bridges the gap between conventional and fully electric vehicles.	10
Q.9	Evaluate how regenerative braking improves the overall energy efficiency of hybrid vehicles.	10
Q.10	Examine the integration of EVs with smart grid technology and its role in sustainable energy systems.	10