[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1377 **I**

Unique Paper Code : 2182011102

Name of the Paper : Environmental Physics

Name of the Course : **B.Sc. Hons. Environmental Sciences- (DSCC-2)**

Semester : I

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer any **four** questions.
3. **All** questions carry equal marks.

P.T.O.

1. (a) Explain the significance of Beer–Lambert law in understanding light absorption. (8)

   (b) Define photovoltaic cells, list their characteristics, and describe their role in renewable energy systems. (7)

2. Write short notes on the following (**any three**) : (5×3=15)

   (a) Blackbody radiation

   (b) Rayleigh scattering

   (c) Diffusion in soil and water

   (d) Water use efficiency in plants

3. Differentiate between the following (any **three**) : (5×3=15)

   (a) Dry and moist adiabatic lapse rates

   (b) Mie scattering and Rayleigh scattering

(c) Turbulence and Laminar flow

(d) Open and Closed ecosystems

4. (a) What do you understand by the greenhouse effect? Discuss its potential and limitations in mitigating climate change. (8)

(b) List different steps involved in assessing pollutant dispersion using the Gaussian plume model. Mention the precautions needed for accurate modeling. (7)

5. (a) Elaborate on the Clausius–Clapeyron equation and its implications for water phase transitions in nature. (8)

(b) Discuss the relationship between soil temperature and heat flow in influencing agricultural productivity. (7)

6. Describe the application of thermodynamic entropy in understanding ecosystem efficiency and sustainability. Provide a step-by-step explanation. (15)