

BBYCT-137

ASSIGNMENT BOOKLET

Bachelor's Degree Programme

(BSCG)

(Plant Physiology and Metabolism)

Valid from 1st January, 2022 to 31st December, 2022



**School of Sciences
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068**

(2022)

Dear Student,

Please read the section on assignments in the Programme Guide for B. Sc. that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment is in this booklet, and is of 100 marks, of which 35% are needed to pass it.

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:

ROLL NO.:

NAME:

ADDRESS:

.....

.....

COURSE CODE:

COURSE TITLE:

ASSIGNMENT NO.:

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) Solve this assignment, and **submit the complete assignment answer sheets within the due date.**
- 6) The assignment answer sheets are to be submitted to your Study Centre within the due date. **Answer sheets received after the due date shall not be accepted.**
We strongly suggest that you retain a copy of your answer sheets.
- 7) This assignment is **valid from 1st January 2022 to 31st December, 2022.** If you have failed in this assignment or fail to submit it by December, 2022, then you need to get the assignment for the year 2023, and submit it as per the instructions given in the Programme Guide.
- 8) **You cannot fill the examination form for this course** until you have submitted this assignment.

We wish you good luck.

ASSIGNMENT

Plant Physiology and Metabolism

Course Code: BBYCT-137

Assignment Code: BBYCT-137/TMA/2022

Maximum Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it.

1. Differentiate between: (2 × 5 = 10)
 - i) Apoplastic and symplastic pathway
 - ii) Diffusion and osmosis
 - iii) Stomatal index and stomatal frequency
 - iv) Water potential and matrix potential
 - v) Primary and secondary active transport
2.
 - a) Enumerate the criteria of essentiality of a mineral nutrient. (3)
 - b) Differentiate between macro and micronutrients. Make a list of trace elements. (3)
 - c) Describe the structure of mycorrhiza. Comment on the role of mycorrhizal root association in mineral nutrition. (4)
3.
 - a) What is PAR? Describe the absorption and action spectra of Chlorophyll a. (5)
 - b) Describe the C₄ cycle with the help of an outline diagram. (5)
4.
 - a) Describe the phenomenon of Emerson's enhancement effect and Red drop effect with the help of a labelled diagram. (5)
 - b) Briefly discuss the 'Law of limiting factors'. (3)
 - c) Name two CAM plants. (2)
5.
 - a) Describe the process of glycolysis with the help of a labelled diagram. (5)
 - b) Graphically illustrate the effect of substrate concentration on the rate of an enzyme mediated reaction. (5)
6.
 - a) What are diazotrophs? Distinguish between the eukaryotic and bacterial *nitrate reductase* enzyme. (5)
 - b) Describe the *glutamate synthase* (GOGAT) route of ammonium assimilation. (5)
7.
 - a) Describe the Munch Mass Flow model of translocation of solutes. (5)
 - b) Discuss the 'sink' to 'source' transition during phloem unloading. (5)

8. Enumerate the naturally occurring hormones in plants. Discuss the discovery, structure, mode of action and practical applications of any *one* of them. (10)
9. a) Distinguish between short day and long day plants giving two examples of each. What is the role of phytochrome in flowering? (5)
- b) What are allosteric enzymes? Discuss with the help of an example. (5)
10. a) What are the different biochemical and morphological changes recorded in plants in response to stress conditions? Discuss. (5)
- b) How does ABA acts as a stress hormone? (5)