



Daffodil
International
University

Department of Genetic Engineering and Biotechnology
Faculty of Health and Life Sciences
B. Sc. (Hons.) in Genetic Engineering and Biotechnology
Midterm Examination Fall 2026

Course Code: 0512-2203

Level and Term: L2, T2

Time: 1 Hour 30 Minutes

Section: 252 (A+B)

Course Title: Plant Physiology

Course Teacher Initials: AR

Total Marks: 25

Answer the Following Questions:

Marks

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| 1 | (a) Define diffusion and list the factors affecting the rate of diffusion. | [CLO3, PLO1, C1] | 2.5 |
| | (b) Differentiate between diffusion and osmosis. | [CLO3, PLO1, C4] | 2.5 |
| 2 | (a) Explain water absorption in plants and describe the <u>significance</u> of water transport in <u>plant growth</u> and <u>physiological activities</u> . | [CLO3, PLO2, C2] | 2.5 |
| | (b) Distinguish between active and passive transport. | [CLO3, PLO1, C4] | 2.5 |
| 3 | (a) Define guttation. Illustrate the <u>structure</u> of a hydathode with a properly labeled diagram and relate its structural components to the process of guttation. | [CLO3, PLO1, C3] | 2.5 |
| | (b) What is transpiration? Classify <u>transpiration</u> based on its site of occurrence and describe each type with a suitable example. | [CLO3, PLO2, C2] | 2.5 |
| 4 | (a) What is essential element of plants? Mention the criteria of essentiality. Classify essential elements with examples. | [CLO3, PLO1, C1] | 2.5 |
| | (b) Evaluate Lundegårdh's theory of active mineral absorption in terms of its proposed <u>mechanism</u> and explanatory significance. | [CLO3, PLO2, C5] | 2.5 |
| 5 | (a) Identify the products of the light-dependent reactions of photosynthesis and illustrate the sequence of reactions in the Calvin cycle using a flow diagram. | [CLO1, PLO2, C3] | 3.0 |
| | (b) Construct a flow diagram showing how C4 plants assimilate CO ₂ to produce carbohydrate. | [CLO1, PLO2, C6] | 2.0 |