



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES**

**DEPARTMENT OF AGRICULTURAL SCIENCES AND AGRIBUSINESS**

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| <b>QUALIFICATION: BACHELOR OF SCIENCE IN HORTICULTURE</b> |                                      |
| <b>QUALIFICATION CODE: 07BHOR</b>                         | <b>LEVEL: 7</b>                      |
| <b>COURSE CODE: PTP610S</b>                               | <b>COURSE NAME: PLANT PHYSIOLOGY</b> |
| <b>DATE: JUNE 2025</b>                                    |                                      |
| <b>DURATION: 3 HOURS</b>                                  | <b>MARKS: 100</b>                    |

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| <b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b> |                       |
| <b>EXAMINER(S)</b>                                  | Dr Grace N. Kanguuehi |
| <b>MODERATOR:</b>                                   | Dr Maliata Wanga      |

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| <b>INSTRUCTIONS</b>  |
| <ol style="list-style-type: none"><li>1. Answer ALL the questions.</li><li>2. Write clearly and neatly.</li><li>3. Number the answers clearly.</li></ol> |

**PERMISSIBLE MATERIALS**

1. Examination question paper
2. Answering book

**THIS QUESTION PAPER CONSISTS OF 1 PAGE (Excluding this front page)**

### QUESTION 1

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- 1.1. How do plants adapt to environmental stress? (3)
- 1.2. Give three reasons why photoperiodism is important for plants? (3)
- 1.3. Explain what is meant by differentiation, giving two examples. (3)
- 1.4. Differentiate between the symplastic and the apoplastic pathway. (3)
- 1.5. What is the difference between anaerobic and aerobic respiration in plants? (5)
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[17]

### QUESTION 2

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- 2.1. What is the importance of soil pH for plant growth? (5)
- 2.2. Explain how water is transported from the roots to the leaves of a plant, including the role of transpiration. (5)
- 2.3. Describe hydroponics and point out the significance of the system. (5)
- 2.4. Give a brief description of stomata and explain the mechanism of stomatal movement. (8)
- 2.5. Differentiate between C<sub>3</sub> and C<sub>4</sub> plant photosynthetic pathways by indicating five differences. (10)
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[33]

### QUESTION 3

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- 3.1 List the two types of mycorrhizal fungi and explain how they facilitate nutrient (including which nutrient is important in which fungi) uptake by plant roots. Also discuss nitrogen-fixing bacteria in roots, giving an example. (10)
- 3.2. Define plant catabolism and describe the three stages of catabolism in details. (10)
- 3.3. Describe the factors affecting the rate of transpiration. (10)
- 3.4. Discuss the forms in which nitrogen is absorbed by the plants, its physiological role and how the deficiency can be identified in plants. (10)
- 3.5. Explain the role and applications of auxin in agriculture and horticulture. (10)
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[50]

**Final Marks: 100**