



FACULTY OF NATURAL RESOURCES MANAGEMENT & AGRICULTURE
DEPARTMENT OF HORTICULTURE & CROP PRODUCTION
BACHELOR OF SCIENCE HONOURS DEGREE IN HORTICULTURE & CROP
PRODUCTION
Plant Biology
NHC 1203

First Semester Final Examination Paper

Nov 2023

This examination paper consists of 3 pages.

Time Allowed:	Three (3) Hours
Total Marks:	100
Special Requirements:	None
Examiner's Name:	R. Mapuranga

INSTRUCTIONS

1. This paper contains two (2) Sections (A and B) and seven (7) Questions
2. Answer **all** questions from **Section A** and **three** questions from **Section B**.
3. Start each question on a new page

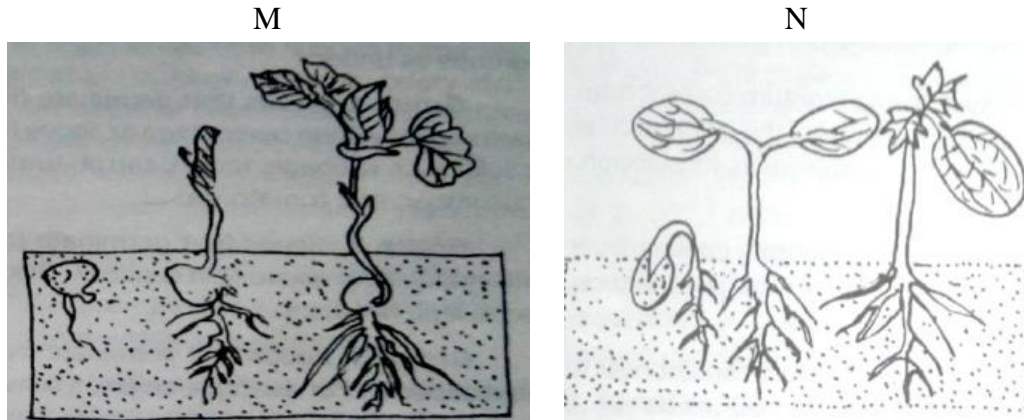
MARK ALLOCATION

QUESTION	MARKS
SECTION A	40
SECTION B	60
TOTAL ATTAINABLE MARKS	100

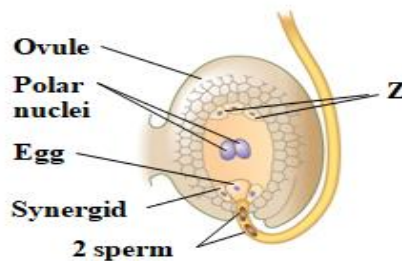
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Section A: Answer all questions [40 Marks]

1. (a) Define the following terms
- i. Tropism [1]
 - ii. Seed [1]
 - iii. Photorespiration [1]
- (b) State the type of seed germination shown on the following diagrams M and N and give an example of one plant species for each method of germination. [4]



- (c) Briefly describe any one simple experiment which led to the discovery of plant hormones [4]
- (d) Everything inside a cell except the nucleus is cytoplasm. True or false? [1]
- (e) With the aid of a diagram (graph), describe the different phases of seed germination [8]
2. (a) List any two differences between low fluence responses and high irradiance responses of plants to phytochrome [4]
- (b) State any four (4) differences between C3 and C4 plants [4]
- (c) Explain how the xylem vessels are adapted for smooth flow of water from the roots to the leaves of a plant [4]
- (d) The following diagram shows the process of double fertilization which is about to happen in the embryo sac.



- i. Name the three cells labelled Z [2]
- ii. State what each of the following will become after double fertilization: Ovary, Egg, and Polar nuclei [6]

Section B: Answer any three questions [60 Marks]

3. (a) Describe any four types of plant movement and explain how they help a plant survive [8]
(b) Discuss the three factors that affect cell water potential (Ψ_w) and write down the overall word equation for cell water potential in plants [12]
4. (a) Outline how any four (4) named plant hormones function in plants [12]
(b) Sketch a well labelled plant cell and indicate which organelles are not found in an animal cell [8]
5. (a) Describe the importance of seed dormancy in agriculture [8]
(b) Write an essay on seed dormancy breaking methods [8]
(c) Using examples, differentiate between primary and secondary seed dormancy [4]
6. (a) Define the word photoperiod [2]
(b) Discuss the classification of plant species according to their response to changes in length of day and night [18]
7. (a) State and explain any two benefits derived by plants from fungal mycorrhizal associations [4]
(b) Identify ways in which the fungal species benefit from the association mentioned in 7(a) above [2]
(c) Discuss the following theories/concepts as they are applied in plant-water relations,
 i. Bulk flow [5]
 ii. Cohesion-tension theory [5]
(d) List and define the two types of diffusional resistance during transpiration [4]

End of Examination Paper