QP CODE	2013570504

Reg. No | | | | | | | | | | |

DMI-ST. EUGENE UNIVERSITY

ZAMBIA

DEGREE EXAMINATION – JUNE 2024

Semester: I **800 BO 105 BOTANY I**

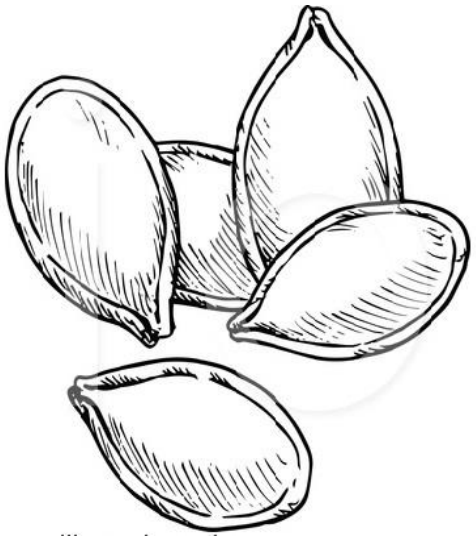
Time: 3:00 Hours **Max. Marks: 100**

Answer any FIVE Questions (5 x 20 = 100 Marks)

1. a) Describe the general structure of a cycas tree. **(10 Marks)**
   b) Compare and contrast viruses and bacteria using two key characteristics being nutrition and reproduction. **(5 Marks)**
   c) Describe the three main parts of a seed and explain the function of each part in seed germination and seedling development. **(5 Marks)**
2. a) Compare and contrast plant cells and animal cells. **(10 Marks)**
   b) Parts of a Microscope and their Functions. **(10 Marks)**
3. a) Describe the differences between a monocot and a dicot seed. **(10 Marks)**
   b) "Imagine a plant growing in a dry environment with limited water availability. How might the structure of its leaves be different from a plant growing in a rainforest with abundant water?" **(5 Marks)**
   c) List at least 5 internal structures of a leaf and explain each of their functions. **(5 Marks)**
4. a) How would you design an experiment to show that some traits are inherited in a predictable way? **(10 Marks)**
   b) Explain the distinction between variation and heredity with the help of examples. Discuss how these two concepts are interrelated in living organisms? **(10 Marks)**
5. a) Explain how stomata open and close and describe consequences for a plant if its stomata malfunction and remain permanently open or permanently closed? **(10 Marks)**
   b) i. Explain three key physical properties of protoplasm and discuss two vital chemical properties of protoplasm and their significance for cellular function. **(5 Marks)**
      ii. Analyse the importance of protoplasm in living organisms. **(5 Marks)**

6. a) Break down the cell theory. **(10 Marks)**

   b) Describe three main structural components of a prokaryotic cell and explain their functions. **(10 Marks)**

7. a) 

   Given a diagram of an unknown seed, identify if it's a dicot or monocot seed based on the visible features and explain your reasoning. **(5 Marks)**

   b) Define insectivorous plants and Give two specific examples of insectivorous plants and briefly describe how they trap insects. **(5 Marks)**

   c) "Imagine a plant growing in a dense forest with limited wind and a river flowing nearby. How might the way it disperses its seeds differ from a plant growing in a dry, open grassland? **(5 Marks)**

   d) Describe three main functions of roots in plants and explain how the structure of a root is adapted to carry out the function.**(5 Marks)**