"Investing in Africa's Future"

(College of health, Agriculture and Natural Sciences)

NACP 112: Agriculture Botany and Plant Physiology

Paper one

END OF SECOND SEMESTER EXAMINATIONS

APRIL/MAY 2024

LECTURER: (Mr. Mtaita T A)

INSTRUCTION

Choose and answer **FOUR** Questions Only

DURATION: (3 HRS)

Question One

a) Given a complete plant (with roots, stems, leaves etc.) how can you tell whether the plant: **[5]**
   i. Is determinate or indeterminate
   ii. Is likely to be wind or insect pollinated
   iii. Has a cymose or racemose inflorescence
   iv. Can fix nitrogen or not
   v. Belongs to the family Alliaceae or not

b) Explain why transpiration in higher plants is considered to be a necessary evil. **[5]**

c) Clearly assess the differences between photoperiodism and vernalization and describe their significances**.** **[15]**

Question two

a) Examine the differences between monocots and dicots. **[10]**
b) Scrutinize the ecological importance of algae. **[10]**
c) Analyse the five [5] advantages of asexual reproduction? **[5]**

Question Three

a) Explain what is meant by the following terms, and for each Name (by common and scientific names) one crop plant that provides an appropriate example. **[10]**

NB: A crop plant must NOT be used more than once

i) Pulse crop
ii) Dicot plant
iii) Winter annual
iv) Mesophyte, and
v) Silage

b) Use the following to write notes on vernalisation in plants [**10]**
   i) Meaning of the term
   ii) Vernalization site
   iii) Effective temperature:
   iv) Duration of exposure
   v) Response of obligate plants to lack of vernalisation
   vi) Response of facultative plants to lack of vernalisation
   vii) Hormone thought to be produced by the vernalized plants
   viii) Meaning and causes of de-vernalisation:
   ix) Stages of vernalisation
   x) Importance of vernalisation to plant in natural state:

c) Given a flower from an unknown plant, explain how you would communicate to other botanists using a floral formula **[5]**

Question Five

a) Explain the following observations **[5]**
   i) Sphagnum moss is commonly used as a potting mix in horticulture
   ii) Both paddy and upland rice require the same amount of nitrogen but less nitrogen-fertilizer is applied to paddy rice than to upland rice
   iii) The banana plant grows up to three metres tall with the apical meristem still underground
   iv) The classification of angiosperms is based very largely on floral structure
   v) Water is important for pollination of Pteridophytes

b) Assess the functions of the main plant parts **[6]**
c) Examine six characteristics of a good phyto-hormone bio-assay. **[6]**
d) Unpack the significance of any four phyto-hormones **[8]**

Question Six

a) Using **five** realistic examples, analyse the rules of binomial nomenclature **[10]**

b) Write an easy on ‘pollination’ and ‘pollination agents’ limiting your write up to: **[15]**

i. Introduction **[2 marks]**

ii. Pollination vectors/agents [**5] Marks]**

iii. Cross pollination and self- pollination **[6 marks]**

iv. Conclusion **[2] marks]**