



2ND SEMESTER 2017/2018

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UNIVERSITY OF SWAZILAND

RESIT EXAMINATION PAPER

PROGRAMMES:

B.SC. IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING YEAR 1
B.SC. IN AGRICULTURAL ECONOMICS AND AGRIBUSINESS MANAGEMENT YEAR 1
B.SC. IN AGRICULTURAL EDUCATION YEAR 1
B.SC. IN AGRICULTURAL EXTENSION YEAR 1
B.SC. IN AGRONOMY YEAR 1
B.SC. IN ANIMAL SCIENCE YEAR 1
B.SC. IN ANIMAL SCIENCE (DAIRY) YEAR 1
B.SC. IN CONSUMER SCIENCE YEAR 1
B.SC. IN CONSUMER SCIENCE EDUCATION YEAR 1
B.SC. IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY YEAR 1
B.SC. IN HORTICULTURE YEAR 1

COURSE CODE: CPR 104

TITLE OF PAPER: BOTANY

TIME ALLOWED: TWO (2) HOURS

**INSTRUCTIONS: ANSWER QUESTION ONE (1) AND ANY OTHER THREE
(3) QUESTIONS OF YOUR CHOICE**

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THE CHIEF INVIGILATOR**

QUESTION 1 (THIS IS A COMPULSORY QUESTION)

For each question, choose the correct option which best answers that question. Read all choices before you choose.

1. The function of the cell wall is to
 - A. Enclose different organelles of the cell and the fluid that harbours these organelles.
 - B. Allow for intercellular movement of water, various nutrients, and other molecules.
 - C. Support and strengthen non extending regions of a plant.
 - D. Limit protoplast size thus preventing cell rapture.
2. The characteristic of the primary cell wall is
 - A. It glues cells together.
 - B. Have altered polysaccharide composition and is lignified.
 - C. It stretches as the cell grows and is the only cell wall in growing and dividing cells.
 - D. Is abundant in walls of conducting and secretory cells.
3. The characteristic of the secondary cell wall is
 - A. It has altered polysaccharide and is lignified
 - B. It glues cells together
 - C. It matures after the primary cell wall and has pits
 - D. Is composed of pectic compounds and proteins
4. The characteristic of the middle lamella is
 - A. It provides medium for transport of water and nutrients
 - B. Is deposited by the protoplast after cell stops growing
 - C. Is a layer between two adjoining cell walls
 - D. Is a layer between the secondary cell wall and the cell membrane.
5. The cell membrane is also called the phospholipid bilayer because
 - A. It has hydrophilic and hydrophobic bilayers
 - B. It has hydrophilic tails and hydrophobic heads
 - C. It has hydrophilic head and hydrophobic tails
 - D. It has two cell wall layers made of phospholipids.
6. The main function of the plasmodesmata is
 - A. To enclose the different organelles of the cell and the fluid that harbours these organelles.
 - B. To facilitate communication and transport of materials between cells.
 - C. To digest lipids from other parts of the cell.
 - D. To play a role in defence against microbes invading the cell.

7. The carbohydrate produced during the Calvin cycle is
- Starch
 - Glucose
 - Phosphoglyceric acid (PGA)
 - Adenoside TriPhosphate (ATP)
8. During photosynthesis, oxygen (O_2) is released from
- Carbon dioxide (CO_2) during the light reactions
 - Carbon dioxide (CO_2) during the Calvin cycle
 - Water (H_2O) during the light reactions
 - Water (H_2O) during the Calvin cycle
9. Crassulacean acid metabolism (CAM) plants
- Open their stomata during the day
 - Open stomata during the night
 - The stomata are always open
 - The stomata opens only when CO_2 is limited in the atmosphere
10. In C_4 plants, photosynthesis happens during
- The light reaction in the mesophyll cells and the Calvin cycle in the bundle sheath.
 - The Calvin cycle in the mesophyll cells and the light reaction in the bundle sheath
 - Both the Calvin cycle and the light reaction happens in the mesophyll cells
 - Both the Calvin cycle and the light reaction happens in the bundle sheath
11. Photosynthetic plants that undergo C_3 photosynthesis begin the process of energy conversion by producing
- Glucose
 - 3-Adenoside Triphosphate (3-ATP)
 - ribulose-1,5-bisphosphate carboxylase/oxygenase (RuBisco)
 - 3-Phosphoglyceric acid (3-PGA)
12. In flowers, the gynoecium consist of
- The stigma, style and anthers
 - Ovary, ovules and petals
 - Filament, anthers and pedicel
 - Stigma, style and ovary.
13. In flowers, the androecium consist of
- Corolla, Calxy and anthers
 - Anther and filament
 - Ovule, stigma and style
 - Receptacle, pedicel and perianth.

14. Microgametophytes are produced from
- A. Microspores by meiosis
 - B. microsporophytes by mitosis
 - C. Microspores by mitosis
 - D. Megaspores by mitosis
15. Megaspores are produced from
- A. Megasporocytes by meiosis
 - B. Megasporophytes by mitosis
 - C. Megasporocytes by mitosis
 - D. Microporocytes by meiosis
16. How many cells are there in the microgametophyte?
- A. 6
 - B. 4
 - C. 2
 - D. 3
17. How many cells are in the megagametophyte?
- A. 16
 - B. 12
 - C. 10
 - D. 8.
18. Pollination is
- A. The transfer of pollen grains from the stigma to the anther
 - B. The transfer of pollen grains from the anther to the stigma
 - C. The movement of pollen in the style to facilitate fertilization in the ovary.
 - D. The release of pollen grains from flowers by pollination vectors.
19. The phenomenon of double fertilization involves the fusion between;
- A. The egg cell and two sperm cells
 - B. The egg cell and one sperm cell, and the two polar nuclei cells and the other sperm cell
 - C. The egg cell and one sperm, and the synergids and the other sperm cell
 - D. The egg cell and the pollen grains
20. The products of double fertilization are
- A. Diploid fruits
 - B. Triploid seeds
 - C. Triploid embryo and haploid seeds
 - D. Diploid zygote and triploid endosperm

21. Botanically speaking, what is a fruit?
- A. Matured ovary of a flower
 - B. Matured seeds and its embryo
 - C. Ripened embryo after fertilization
 - D. Matured gynoecium after fertilization
22. Aggregate fruits are
- A. Fruits which split open along definite edges at maturity to shed their seeds
 - B. Composed of ovaries from separate pistils of one flower
 - C. Composed of ovaries from separate pistils of several flowers
 - D. Fruits which do not split open along definite edges at maturity to shed their seeds
23. Which of the following fruits are false berries?
- A. Peach and plum
 - B. Tomato and banana
 - C. Raspberry and strawberry
 - D. Pumpkin and watermelon.
24. Which of the following fruits are hesperidiums?
- A. Peach and plum
 - B. Orange and lemon
 - C. Raspberry and strawberry
 - D. Pumpkin and watermelon.
25. Which of the following fruits are caryopses?
- A. Maize and rice
 - B. Beans and groundnuts
 - C. Sweet potato and cassava
 - D. Apple and pear

[25 MARKS, 1 MARK EACH]

QUESTION 2

Discuss the morphology of the root and shoot systems in angiosperms and explain why the two systems depend on each other for survival. **[25 MARKS]**

QUESTION 3

- a) Draw a well labelled diagram showing the cross section of a dicot primary root. (11 marks)
- b) Give functions of all the labelled anatomical features of your diagram. (14 marks)
- [25 MARKS]**

QUESTION 4

In detail, describe the following terms related to growth and development of angiosperms;

- a) Shoot apical meristem (10 marks)
- b) Lateral meristems (10 marks)
- c) Intercalary meristems (5 marks)
- [25 MARKS]**

QUESTION 5

Give the complete scientific classification of any cultivated plant (one plant) belonging to the following Families;

- a) Poaceae (5 Marks)
- b) Rutaceae (5 Marks)
- c) Fabaceae (5 Marks)
- d) Convolvulaceae (5 Marks)
- e) Solanaceae (5 Marks)
- [25 MARKS]**