



**2<sup>ND</sup> SEM. 2004/2005**

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**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER**

**PROGRAMME:** DIPLOMA IN AGRICULTURE YEAR 1,  
DIPLOMA IN AGRICULTURAL EDUCATION  
YEAR 1, DIPLOMA IN HOME ECONOMICS  
YEAR 1 AND DIPLOMA IN HOME ECONOMICS  
EDUCATION YEAR 1

**COURSE CODE:** CP 100

**TITLE OF PAPER:** BIOLOGY (BOTANY)

**TIME ALLOWED:** TWO (2) HOURS

**INSTRUCTIONS:** ANSWER ALL QUESTIONS

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BY THE CHIEF INVIGILATOR**

**SECTION 1(((MULTIPLE QUESTIONS (40) EACH WORTH TWO (2) MARKS)))**

- 1. The gametophyte generation of an angiosperm begin with**
  - a) syngamy**
  - b) mitosis**
  - c) the spore mother cell**
  - d) meiosis**
  
- 2. The gametophyte generation of an angiosperm ends with**
  - a) syngamy**
  - b) mitosis**
  - c) the spore mother cell**
  - d) meiosis**
  
- 3. The fertilization of the fused polar nuclei by a sperm stimulate the development of**
  - a) the cotyledones**
  - b) the embryo**
  - c) the seed coat**
  - d) the endosperm**
  
- 4. The female gameophyte consists of a pollen grain with a pollen tube and at least**
  - a) 1 nucleus**
  - b) 2 nucleus**
  - c) 3 nucleus**
  - d) 4 nucleus**
  
- 5. Most commonly the fruit of a plant develops from the**
  - a) embyro**
  - b) cotyledons**
  - c) endosperm**
  - d) ovary**
  
- 6. The fruit seems to function primarily in**
  - a) help with seed dispersal**
  - b) providing additional food for embyro**
  - c) storing food for later use by the adult plant**
  - d) synthesizing food**

7. What animal cell corresponds to the three megaspores which degenerate following meiosis
- megagametophyte
  - primordial cell
  - polar bodies
  - secondary oocyte
8. What plant cell corresponds functionally to the primary spermatocyte
- microspore mother cell
  - microspores
  - tube nucleus
  - generative nucleus
9. How many pollen grains are produced by 20 microspore mother cells?
- 20
  - 40
  - 60
  - 80
10. How many sperm nuclei are produced by a dozen microspore mother cells?
- 12
  - 24
  - 48
  - 96
11. How many spermatozoa are produced by a spermatogonium
- 1
  - 2
  - 3
  - 4
12. Evapotranspiration is measured by
- potometer
  - cobalt chloride paper
  - lysimeter
  - direct weighing
13. Light affects the rate of transpiration by its influence on
- opening and closing of stomata
  - closing the stomata when water is deficient
  - opening the stomata and increasing the leaf temperature
  - opening the stomata and pumping potassium

14. If ambient temperature is 30°C, the leaf temperature is likely to be
- 29
  - 30
  - 31
  - 32
15. Water movement from the leaf surface to the surroundings is limited by
- boundary layer resistance
  - mesophyll resistance
  - cuticle resistance
  - stomatal resistance
16. Significance of transpiration in plant growth is for
- evaporative cooling only
  - evaporative cooling through mineral transport
  - evaporative cooling and mineral transport
  - evaporative cooling and latent heat of evaporation
17. Transpiration is important in processes that affect photosynthesis or respiration because
- it keeps mesophyll cell moist
  - it prevent carbon dioxide entry into the leaf
  - it allows water to escape from the leaf
  - it allows ascent of sap
18. Root pressure has been dismissed as one of the factors for water movement in tall trees because
- it occurs in all plants
  - root pressure causes fast movement of water
  - it develops positive xylem pressure
  - it is seasonal and it coincides with low sap movement
19. Root pressure is the function of
- osmotic potential of the xylem being more positive than soil solution
  - osmotic potential of the xylem being more negative than soil solution
  - osmotic potential of the xylem being equal to the soil solution
  - osmotic potential of the phloem being more negative than soil solution

20. Root pressure maintenance is by the activities of
- respiration
  - photosynthesis
  - transpiration
  - evaporation
21. Known rates of root pressure in herbaceous plant are
- less than 2 bars
  - less than 7 bars
  - more than 7 bars
  - none of the above
22. The cohesion theory of the ascent of sap depends upon
- energy expenditure
  - no energy expenditure
  - the power of transpiration
  - the power of evaporation
23. The primary motive force that drive transpiration is
- latent heat of condensation
  - latent heat of evaporation
  - latent heat of supercooling
  - latent heat of vaporization
24. The wilting percentage is defined as
- bound water
  - water held in the larger pore space
  - water held in small pore space
  - gravitational water that is not available to plants
25. Field capacity is defined as
- maximum amount of capillary and gravitational water
  - maximum amount of capillary water and hygroscopic water
  - maximum amount of capillary water
  - maximum amount of gravitational water
26. Free surface water have water potential of
- negative one bar
  - positive one bar
  - negative fifteen bars
  - zero bar

27. A sandy soil and clay soil has water potential of negative 10 bars. In which soil would the plant fail to obtain water?
- sandy soil only
  - clay soil only
  - both sandy and clay soil
  - none of the above
28. Plant roots response to water is referred to as
- geotropism
  - phototropism
  - hydrotropism
  - mesophyte
29. The stem vascular bundle distribution is the same as the root anatomically
- no
  - yes
  - I do not know
  - None of the above
30. Water movement from the roots xylem to the leaves is a function of
- osmotic potential
  - pressure potential
  - water potential
  - solute and pressure potential
31. What are the effects of adding solute on water potential?
- increase water potential
  - reduce water potential
  - increase pressure potential
  - reduce pressure potential
32. Pressure potential becomes evident in what state?
- liquid systems
  - gas systems
  - in both gas and liquid systems
  - in open osmotic system
33. Osmometer is an example of what?
- open system
  - closed system
  - u-tube system
  - closed plastic bag system

34. Diffusion is the same as osmosis except that it needs that
- both solvent and solute to transverse the barrier
  - only solvent transverse the barrier
  - only solute transverse the barrier
  - both solute and solvent do not transverse the barrier
35. The plasmalemma and the protoplast are typical examples of
- permeable membrane
  - semi-permeable membrane
  - solute permeable membrane
  - solute semi-permeable membrane
36. The chemical potential of substance is defined as
- free energy per mole of that substance
  - concentration level of that substance
  - free energy lost by that substance
  - free energy gained by the substance
37. The corresponding term for hydrostatic pressure is
- water pressure
  - osmotic pressure
  - solvent pressure
  - water potential
38. A cell whose protoplast show a degree of contraction from the cell wall is said to be what?
- isotonic
  - turgored
  - plasmolyzed
  - hypotonic
39. Water potential of solution is determined by
- dissolved solute only
  - exerted pressure only
  - both dissolved solute and exerted pressure
  - none of the above
40. An isotonic cell is at what
- full turgor
  - half turgor
  - zero turgor
  - complete plasmolysis

**SECTION TWO (2)**

**41. Give the scientific names of the following plant species (each plant species carries 2 marks)**

- a) maize**
- b) common beans**
- c) avocado**
- d) mango**
- e) irish potato**
- f) tomato**
- g) onion**
- h) cassava**
- i) sweet orange**
- j) sorghum**