

THE OPEN UNIVERSITY OF SRI LANKA
B. Sc / B. Ed DEGREE PROGRAMME -2010/11
BOTANY – LEVEL 4
BOU2200 / BOE4200: PLANT PHYSIOLOGY
ASSESSMENT TEST 1 (OPEN BOOK TEST)
DURATION: ONE (01) HOUR



REGISTRATION NO.

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DATE: /3/2011

TIME: 4.00 PM – 5.00 PM

INSTRUCTIONS: This paper has two types of questions. 1st - 10th are multiple choice questions. You need to underline the best suited answer for each multiple choice questions. Questions 11 – 23 onward require short written answers in point form.

1. What is the component of the cell that is not belongs to cytoplasm
 - A) Endomembrane system
 - B) Cytoskeleton
 - C) Rhibosome
 - D) Nucleus
 - E) Leucoplasts
2. What is the organelle that aid in root elongation through rough surfaces
 - A) Microtubules
 - B) Microfilaments
 - C) Plasmadesmata
 - D) Dictyosome
 - E) Mitochondrium
3. What best describes the 'available water' to the plant?
 - A) Hygroscopic water
 - B) Gravitational water
 - C) Water retained after removed the gravitational water
 - D) Difference of water content at permanent wilting point and field capacity
 - E) All types of water held at field capacity

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4. The root hair zone is
- A) The region at the root tip
 - B) Having dense cytoplasm hence restricts nutrient absorption
 - C) Present in the region with functional xylem
 - D) Having hypodermis underneath
 - E) Placed between functional xylem region and meristematic region of the root tip
5. What is not the function of water in the cells
- A) Hydration of organic compounds
 - B) Dissolves O_2
 - C) React with glucose
 - D) Keep plants erect
 - E) Mineral absorption
6. Transpiration is not beneficial to the plants growing in tropics because
- A) It causes the heat loss
 - B) It causes minerals are moved along the transpiration stream
 - C) It establishes the water potential gradient along the stem
 - D) It facilitates absorbance of CO_2
 - E) It facilitates to get rid of water
7. Osmotic potential of the 5 M sucrose solution at 27 C is
- A) $0.00832 \times 273 \times 5$
 - B) $0.00832 \times 300 \times 5$
 - C) $0.00832 \times 299 \times 5$
 - D) $(1 \times 0.00832 \times 300)/V$
 - E) None of the above

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8. The plant growth regulator that involves with regulation of water loss through transpiration is

- A) ABA B) IAA C) GA D) IBA E) Ethylene

9. What is the factor that has higher contribution to the ascent of sap of a taller plant

- A) Capillarity B) Root Pressure C) Adhesive and cohesive forces
D) water potential gradient E) Cavitation

10. What is the correct order of the following sequence

- A-inhibition of proton pump B-K accumulation C- ABA synthesis
D-increase osmotic potential E- stomata opening F-influx of water

- A) C, A, B, D, F, E B) A, B, C, D, E, F C) C, A, B, D, E, F
D) A, C, B, D, F, E E) C) C, F, B, D, E, A

11. Compare the functions of different types of microbodies in the cells

12. Compare the structural variation in the membranes of the mitochondria and chloroplasts

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13. What do you think as the most important type of monosaccharide in a cell? Justify your answer giving reasons

14. Why does the enzyme amylase which acts specifically in α 1-4 glycosidic bonds unable to digest amylopectine and cellulose completely?

15. What are the component molecules in the biological membranes that causes following functions

Monovalent cation transport -

Sensing the presence of pathogen -

Facilitate the expansion of cytoplasm -

16. Define osmosis in terms of diffusion

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17. 'The water potential of any solution is equal to 0 or lower than 0'. Explain the theoretical basis of this claim

18. What is the pressure potential of 5M NaCl open to atmosphere? If osmotic potential of this solution is -0.7245 MPa what is the water potential? State your assumptions clearly.

19. Calculate the **relative water content** of the 100 mg of fresh plant tissue that absorb 15 ml of more water when at turgid. Clue: 70% of the weight of fresh cell is water which will be evaporated. $1\text{ml H}_2\text{O} = 1\text{ mg}$

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20. Briefly state how do you measure the solute potential of the cells using the plasmolysis process

21. Explain the field capacity and permanent wilting point of the soils in relation to water availability to plant growth

22. List three adaptations found in the plant kingdom that minimize the effect of xylem cavitation on water movement

23. What are the resistances operate on the leaf that regulate the rate of transpiration?

-----DID YOU WRITE YOUR REGISTRATION NO. ON THE TOP LEFT OF EACH PAGE? -----