

THE OPEN UNIVERSITY OF SRI LANKA
B. Sc / B. Ed DEGREE PROGRAMME -2011/12
BOTANY – LEVEL 4
BOU2200 / BOE4200: PLANT PHYSIOLOGY
ASSESSMENT TEST 1 (OPEN BOOK TEST)
DURATION: ONE (01) HOUR



REGISTRATION NO.

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DATE: 3rd March 2012

TIME: 11.45 AM – 12.45 PM*

PLEASE ANSWER ALL THE QUESTIONS

Duration: 1 Hour

INSTRUCTIONS: This paper has 25 questions. 1st – 23rd are multiple choice questions and you need to write the number of the best suited answer for each multiple choice question in the box given in front. Questions 24th and 25th require short written answers.

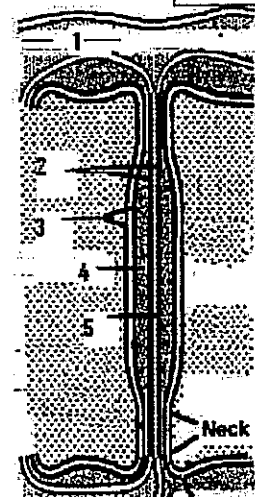
1. Which of the following molecules moves regularly from the nucleus to the cytoplasm and from cytoplasm to nucleus?
- RNA and Proteins
 - RNA and DNA
 - Glucose and RNA
 - RNA and Cholesterol

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2. Which of the following is *not* the correct pairing of structure with function?
- Mitochondrion : synthesis of ATP
 - Golgi complex: breakdown of complex molecules
 - Endoplasmic reticulum : synthesis of proteins
 - Peroxisomes : breakdown of glycolic acid

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3. The given diagram in your right depicts the cross section of plasmodesmata. What is the correct sequence of names of the numbered labels in the diagram?
- desmotubule, Endoplasmic reticulum, plasmalemma, central rod, central cavity
 - Endoplasmic reticulum, desmotubule, plasmalemma, central cavity, central rod
 - Endoplasmic reticulum, plasmalemma, desmotubule, central cavity, central rod
 - Endoplasmic reticulum, desmotubule, plasmalemma, central rod, central cavity



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8. Which of the following would have the least contribution to the process by which water moves through a root?

- a. Active transport
- b. Diffusion
- c. Imbibition
- d. Osmosis

8

9. Water potential measures the tendency of water to

- a. Move from one place to another
- b. Evaporate
- c. Condense
- d. Kinetic energy

9

10. What is the pressure potential of a cell (water potential: $\psi_w = -30$ Mpa and solute potential: $\psi_s = -25$ Mpa) which is being equilibrate in the sucrose solution with solute potential of -10 Mpa.

- a. 10 MPa
- b. 30 MPa
- c. -15 MPa
- d. 15 MPa

10

11. What is the best match that gives correct expression (in the right textbox) for following terms in the left textbox?

I. Field capacity
 II. Permanent wilting percentage
 III. Available water

A. total soil water - (gravitational water + hygroscopic water)
 B. field capacity - permanent wilting percentage
 C. total soil water - (gravitational water + capillary water)

- a. I → C, II → A, III → B
- b. I → A, II → C, III → B
- c. I → C, II → B, III → A
- d. I → A, II → B, III → C

11

12. The root hair zone is

- a. Having dense cytoplasm hence restricts nutrient absorption
- b. Placed between functional xylem region and meristematic region of the root tip
- c. Present in the region with functional xylem
- d. Having hypodermis underneath

12

13. Which of the following pathways of water movement has the least contribution for water uptake?

- a. Cell wall → plasma membrane → tonoplast → vacuole → tonoplast → plasma membrane → cell wall
- b. Cell wall → plasma membrane → cytoplasm → plasma membrane → cell wall
- c. Cell wall → intercellular spaces → cell wall
- d. Intercellular spaces → cell wall → plasma membrane → cytoplasm → plasma membrane → cell wall → Intercellular spaces

13

22. Phloem always move material from a

- a. Sugar source to sugar sink
- b. Sugar sink to a sugar source
- c. Root xylem to phloem
- d. Leaf cells to root cells

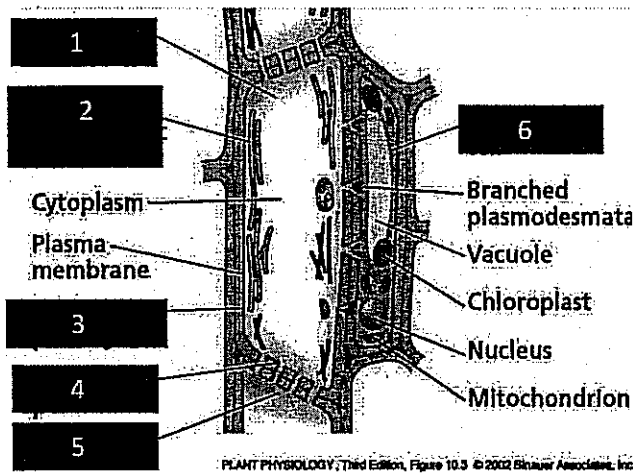
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23. Active loading of sugar into a sieve tube is probably driven by

- a. Gravity
- b. Water flow
- c. Transpiration
- d. Proton pumps

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| 23 |
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Questions 24 and 25 are based on the following diagram. Write your answer in the box given opposite to the question.



24. Identify the above diagram and briefly write on the function of it.

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25. Identify the indicated parts in the above diagram and write the names in front of each number below.

| Numbered part | Name of the part |
|---------------|------------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |