**Assignment**

**Physiology BOT271**

**First semester 2019/2020**

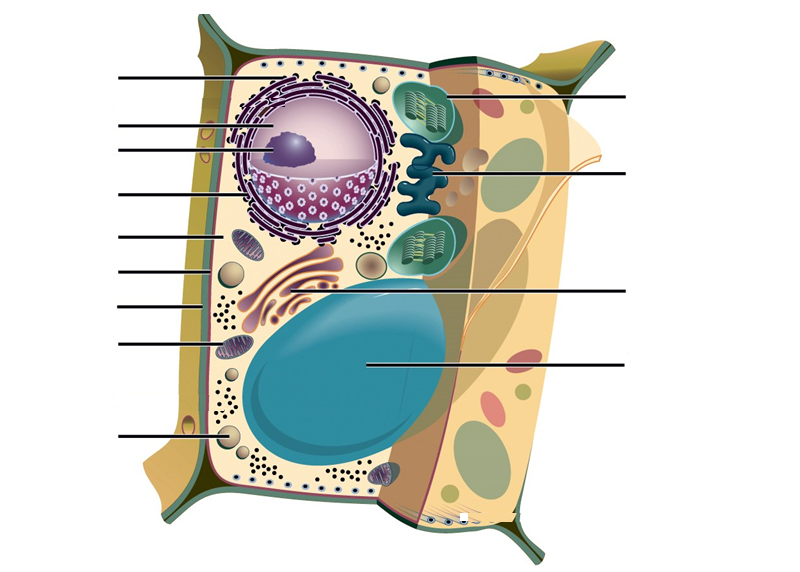
Name: ..............................................................

University ID: ..............................................................

Section no.: 59825

1. Complete the appropriate cell structure name on the following plant cell:

(Golgi apparatus – Nucleus – Vacuole – cell wall – cytoplasm – Mitochondrion – Rough ER – Smooth ER – chloroplast – plasma membrane – Nucleolus – Vesicle – Ribosomes)

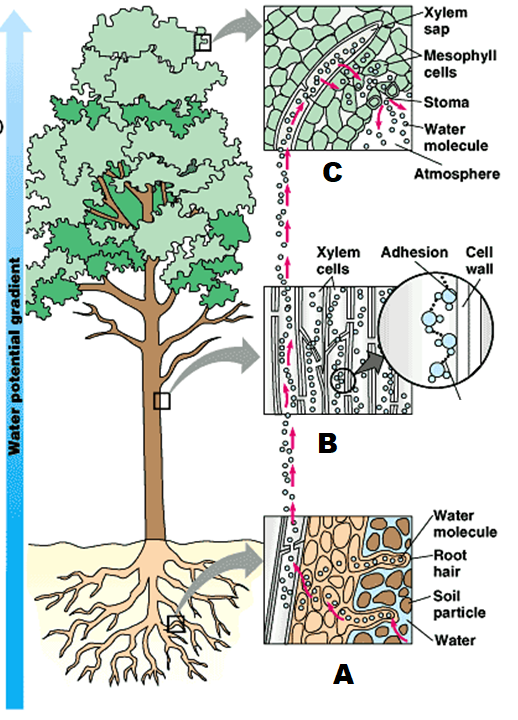


1. Plants control the hydration of their cells through three steps – mention the steps according to the illustration

A)

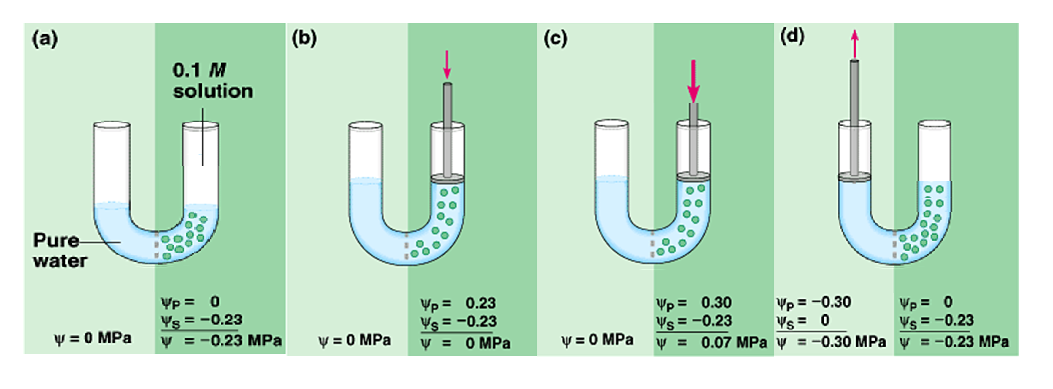
B)

C)



1. Choose the right answer:
2. You’ve already seen the structure of xylem and phloem. How is a redwood tree able to move water from the soil to leaves 100m above the soil? Choose the appropriate theory.
3. Root pressure
4. cohesion tension
5. vapor movement
6. capillary action
7. Osmotic potential (Ψπ) – the diffusion of liquid water molecules from a ------------- across a -------------------- membrane into a -----------------.
8. selectively permeable
9. (less water, more solute)
10. permeable
11. (more water, less solute)
12. Pressure --------------- water potential.
13. Decreases
14. Increases
15. Stabilizes
16. Doesn’t affect
17. Transpiration (or evapo-transpiration) is the transport of water and minerals from roots to leaves. It involves
18. Absorption at the roots.
19. cohesion tension in the xylem vessels.
20. Evaporation at the leaf.
21. All the mentioned above.
22. Which of the following is a colloidal system?
23. mud
24. gasoline
25. blood
26. a mixture of sugar and water
27. From the epidermis to the endodermis there are several pathways in which water can flow from them
28. Osmotic pathway
29. Symplast pathway
30. Diffusion pathway
31. All the mentioned above
32. In a C4 plant, ------------------ structure enter in the photosynthesis process.
33. Bundle sheath
34. Epidermis
35. Phloem
36. Guard cells
37. Mineral nutrients acquired by plants through
38. Artificial: called foliar application.
39. Associations with mycorrhizal fungi.
40. Uptake by the roots.
41. All the mentioned above.
42. From which direction will the water flow through the membrane according to the following illustration.

(no water flow – left to right – right to left)



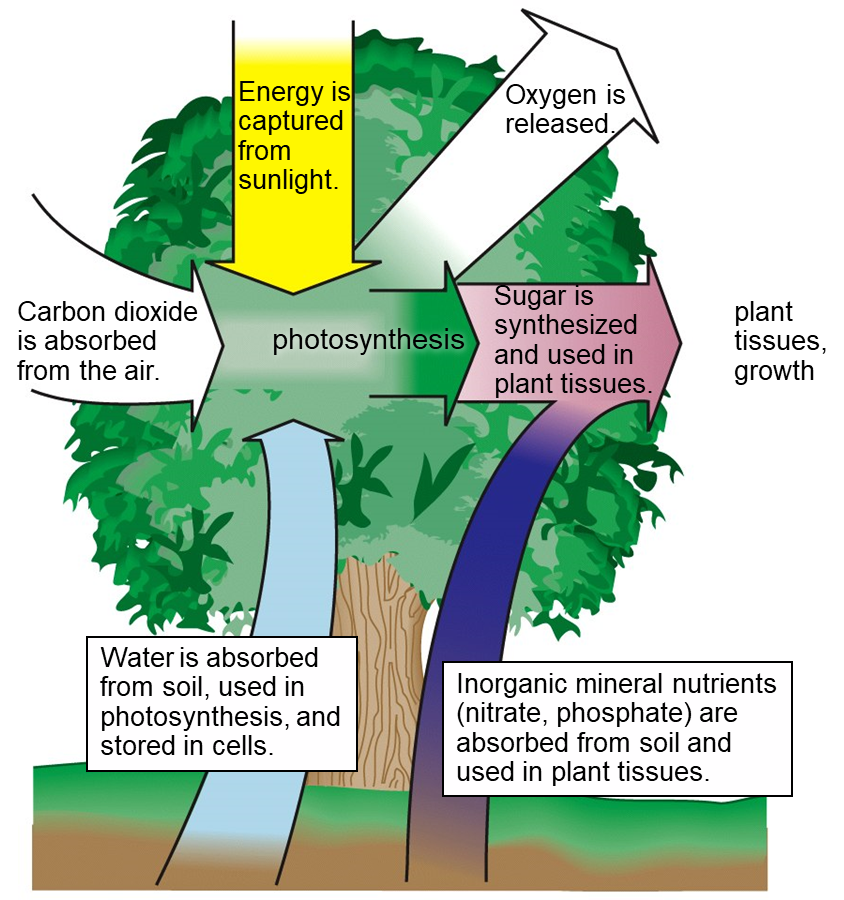
1. Read the sentence carefully and determine whether it is true or false:
2. Cell Wall in plants contains chitin.
3. Rough Endoplasmic Reticulum doesn’t contain ribosomes attached to surface and responsible for proteins manufacture.
4. Photosynthesis takes place in the chloroplast and makes cellular food – glucose.
5. The combined effects of solute concentration and physical pressure (cell wall) can be measured as Water Potential.
6. Sink in sugar transport where the sugar starts its journey (either where it is produced or stored).
7. Phloem tissues are dead at maturity.
8. Passive transport is used to load sucrose into phloem tubes against a diffusion gradient.
9. pH affects the growth of plant roots and soil microbes.
10. Plants require nine macronutrients and at least eight micronutrients.
11. Light dependent reaction of photosynthesis takes place in the chloroplast stroma.
12. An essential nutrient is a chemical element that is required for a plant to grow from a seed and complete the life cycle.
13. Exocytosis is a process of taking material into the cell by means of infoldings, or pockets, of the cell membrane (usually putting them into a vacuole).
14. NADPH is the energy coin in the cell.
15. Passive Transport - requires cell energy, examples: Diffusion, Facilitated diffusion and Osmosis.
16. C3 plants are at a disadvantage in hot, dry climates
17. Match column A with B

|  |  |
| --- | --- |
| A | B |
| **Suspension** | scattering of light by particles in a colloid or suspension, which causes a beam of light to become visible |
| **Colloid** | the colloidal dispersion of one liquid in another |
| **Tyndall effect** | the chaotic movement of colloidal particles, caused by collision with particles of the solvent in which they are dispersed |
| **Brownian motion** | a mixture whose particles are intermediate in size between those of a suspension and a solute solution |
| **Emulsion** | a mixture from which some of the particles settle out slowly upon standing |

1. Observe the diagram then answer:
2. This diagram shows that photosynthesis is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reaction because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Carbon for making carbon compounds (such as sugar) comes from \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Oxygen, hydrogen, and minerals are needed also. Oxygen and hydrogen come from \_\_\_\_\_\_\_\_\_\_. Minerals comes from \_\_\_\_\_\_\_\_\_\_\_\_.



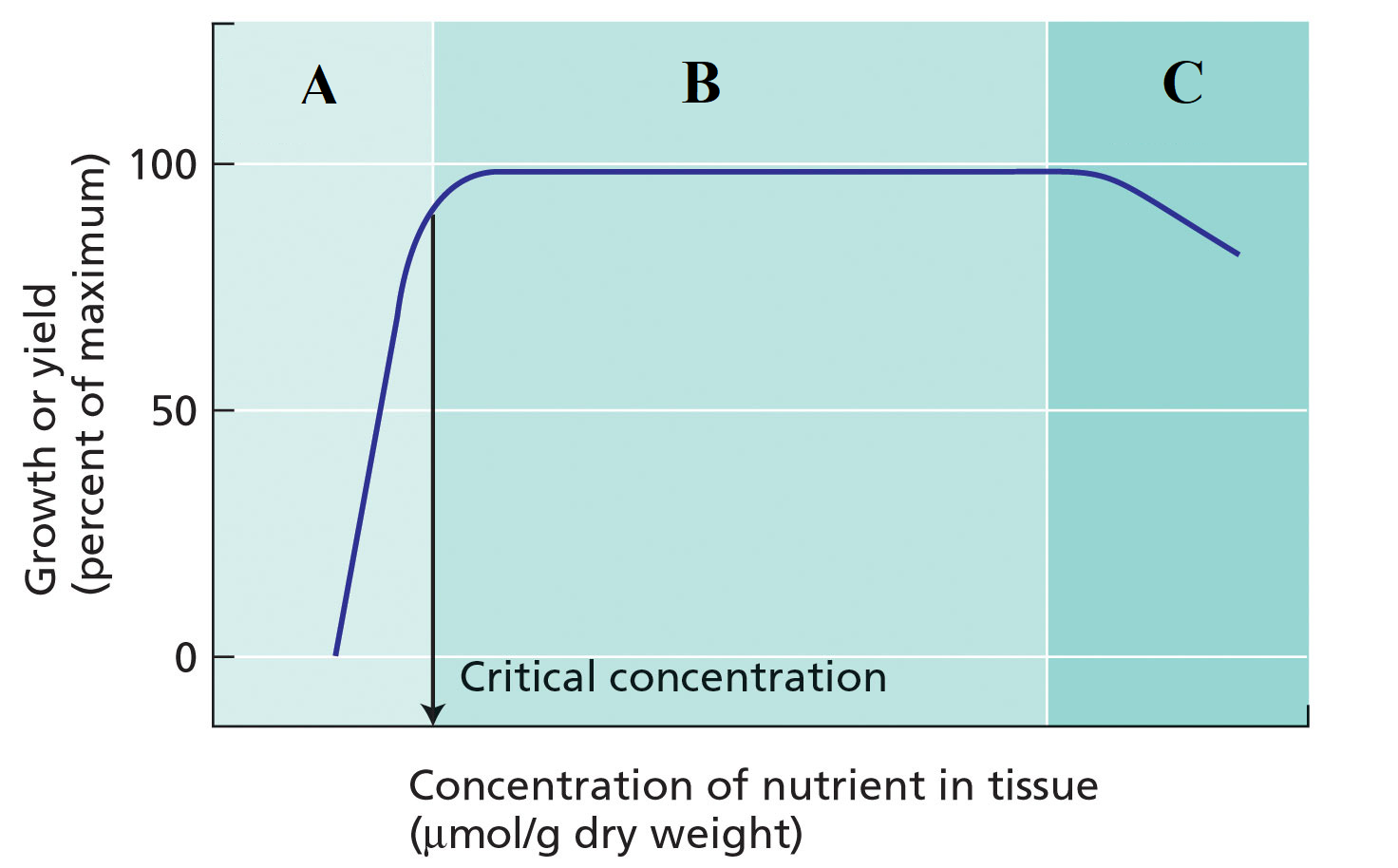
1. According to the following relationship between the concentration of nutrient in tissue and plant growth

A – zone.

B – zone.

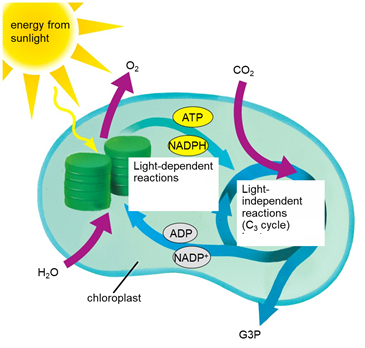
C – zone.

(toxic – deficiency – adequate)



1. Light energy is “captured” by \_\_\_\_\_\_\_\_\_\_\_, which is embedded in the thylakoid membranes

\_\_\_\_ and \_\_\_\_\_\_\_ are used to move energy from one part of the chloroplast to another.

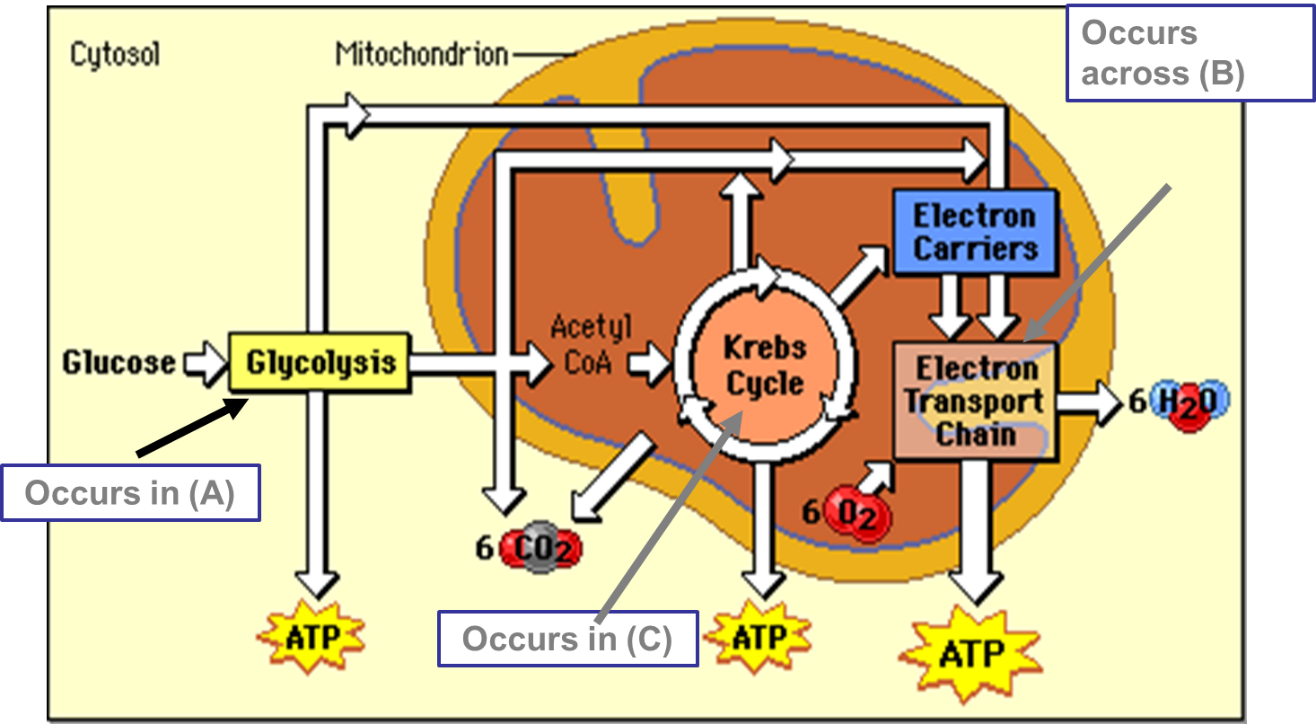


1. Respiration steps occurs in

(A) ---------------------------------- ,

(B) ---------------------------------- ,

(C) ---------------------------------- .



1. From which direction will the water flow through the membrane according to the following illustration.

(Hypotonic solution, water moves into the cell – Isotonic solution, water moves in both directions – Hypertonic solution, water moves out of the cell)

## 

* Explain why a mixture of sand and water can be separated by filtration, but a mixture of salt and water cannot?
* **Solute Potential ΨS** of any solution at atmospheric pressure is always negative – why?
* What is the equation for the chemical reaction of photosynthesis and respiration?
* What are the two types of reactions in photosynthesis and where are they occur?