
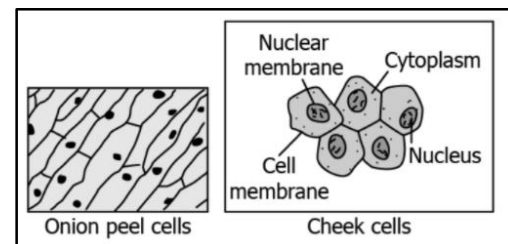
	INDIAN SCHOOL AL WADI AL KABIR	
Class: IX	DEPARTMENT OF SCIENCE -2022-23 SUBJECT: BIOLOGY	DATE OF COMPLETION: 12.05.22
WORKSHEET NO:1 WITH ANSWERS	TOPIC: THE FUNDAMENTAL UNIT OF LIFE-PART I	A4 FILE FORMAT (PORTFOLIO)
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

I. MULTIPLE CHOICE QUESTIONS:

- Cells present in living organism differ in:
 - Numbers
 - Shape
 - Size
 - All of these
- A cell will swell up if:
 - The concentration of water molecules in the cell is higher than the concentration of water molecules in surrounding medium.
 - The concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell.
 - The concentration of water molecules is same in the cell and in the surrounding medium
 - concentration of water molecules does not matter.
- The image shows cells in the onion peel and human cheek. What can be understood by observing these cells?
 - All living things are made up of cells that look similar.
 - All living things are made up of cells that are structurally similar but functionally different.
 - All living things are made up of cells that look different from each other.
 - None of the above.
- The main function of a plasma membrane is to:
 - Prevent water from entering or leaving.
 - Control what goes into and out of the cell.



- c) Act as a sieve, allowing only lipids to pass.
 - d) Move the cell from place to place.
5. What is a basis for differentiation of a prokaryotic cell from a eukaryotic cell?
- a) Presence or absence of cytoplasm
 - b) Presence or absence of cell membrane
 - c) Presence or absence of genetic material
 - d) Presence or absence of membrane bound organelles
6. Who proposed the cell theory?
- a) Schleiden and Schwann
 - b) Watson and Crick
 - c) Darwin and Wallace
 - d) Mendel and Morgan
7. Solute concentration is higher in the external solution:
- a) Hypotonic
 - b) Isotonic
 - c) Hypertonic
 - d) None of above
8. The cell membrane is composed primarily of:
- a) Cellulose
 - b) Chitin
 - c) Lipids
 - d) Lipids and proteins
9. What will happen to an animal cell placed in a concentrated salt water solution?
- a) The cell will shrink
 - b) The cell will expand
 - c) The cell will burst
 - d) The cell will shrink and then expand and then shrink again
10. If a red blood cell (interior concentration of 0.9% salt) was placed into a test tube of 10% salt, what would happen to the red blood cell –
- a) It would fill with water and burst.
 - b) Nothing - the solution is isotonic to the interior of the red blood cell.
 - c) The red blood cell would shrink as it loses water to the salt solution in the test tube.
 - d) None of these

II. ASSERTION AND REASONING:

For the questions 11 and 12, two statements are given—one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the options (i), (ii), (iii) and (iv) as given below:

(i) Both A and R are true and R is the correct explanation of the assertion.

- (ii) Both A and R are true but R is not the correct explanation of the assertion.
- (iii) A is true but R is false.
- (iv) A is false but R is true.

11. **Assertion (A):** The shape of the cells are of different types ranging from circular, elongated, tubular, oval, cylindrical, etc.

Reason(R): The shape of the cells varies according to the specific function they perform.

12. **Assertion (A):** Cell wall is not found in animal cell.

Reason(R): Animal cells are covered by cell membrane.

III. PASSAGE BASED QUESTIONS:

Plant cells, in addition to plasma membrane have another rigid outer covering called the cell wall. The cell wall lies outside the plasma membrane. The plant cell wall is mainly composed of cellulose. Cellulose is a complex substance and it provides a definite shape, durability and additional protection to the plant cell. Cell wall is invariably lacking in animal cells. When a living plant cell loses water through osmosis, there is shrinkage or contraction of the contents of the cell away from the cell wall. This phenomenon is known as plasmolysis.

- a) What is cell wall in plant cell composed of?
- b) State the functions of cell wall.
- c) What is meant by plasmolysis?
- d) How do bacteria and fungi survive in very dilute external medium?

IV. SHORT ANSWER TYPE QUESTIONS

- 13. Differentiate between diffusion and osmosis.
- 14. Give three differences between plasma membrane and the cell wall.
- 15. What happens to a plasmolysed cell when it is placed in water?
- 16. Two beakers A and B contain plain water and concentrated sugar solution respectively. Equal number of dried raisins and fresh grapes are kept in A and B for a few hours and then taken out. Explain the reason for the difference in the physical appearance of raisins/grapes which were taken out of the two beakers.

V. LONG ANSWER TYPE QUESTIONS

- 17. In brief state what happens when:
 - i) Dry apricots are left for some time in pure water and later transferred to sugar solution?
 - ii) A red blood cell is kept in concentrated saline solution?
 - iii) The plasma membrane of a cell breaks down?
 - iv) Rheo leaves are boiled in water first and then a drop of sugar syrup is put on it?
- 18. Distinguish between hypotonic solution, isotonic solution and hypertonic solution.

VI. BOARD BASED QUESTIONS:

- 19. How does endocytosis help an organism like amoeba?
- 20. Why is the plasma membrane called as selectively permeable membrane? Write one function of it.

ANSWERS

1	d) All of these
2.	b) The concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell.
3.	c) All living things are made up of cells that look different from each other.
4.	b) Control what goes into and out of the cell
5.	d) Presence or absence of membrane bound organelles
6.	a) Schleiden and Schwann
7.	c) Hypertonic
8.	d) Lipids and proteins
9.	a) The cell will shrink
10.	c) The red blood cell would shrink as it loses water to the salt solution in the test tube.
11.	(i)Both A and R are true and R is the correct explanation of the assertion.
12.	(ii)Both A and R are true but R is not the correct explanation of the assertion.
	<p><u>III. PASSAGE BASED QUESTIONS:</u></p> <p>a) Cell wall in plant cell is composed of cellulose.</p> <p>b) It provides definite shape, durability and additional protection to the plant cell.</p> <p>c) When a living plant cell loses water through osmosis, there is shrinkage or contraction of the contents of the cell away from the cell wall. This phenomenon is known as plasmolysis.</p> <p>d) Bacteria and fungi can survive in very dilute external medium that is in hypotonic solution. In hypotonic medium, bacteria and fungi take up water from the external medium by the process of osmosis. Due to high amount of water inside, the cell swells up and builds up pressure against the cell wall. At this point, the cell wall exerts an equal pressure against the swollen cell because of their walls, Hence, cells with cell wall like bacteria and fungi can withstand extreme changes in the external environment.</p>

13.	Basis of Comparison	Diffusion	Osmosis
	Meaning	It refers to the movement of molecules from a region of higher concentration to the lower concentration.	It is the movement of a solvent (mostly water) from the region of higher concentration to lower concentration through semi permeable membrane.
	Medium	It takes place In any medium of solid, liquid or gas	It takes place only in a liquid medium
	Semi-permeable membrane	Does not require it	Requires a semi-permeable membrane
	Function	Exchange of gases during respiration in animals and transpiration and photosynthesis in plants	Maintains the water at the cellular level in animals, maintains the turgidity in plants and offers mechanical support
	Example	The scent of perfume filling a whole room	Plant root hairs taking up water
14.	<p>1. Cell membrane is present in all cells while cell wall is only present in plants, bacteria, fungi and algae.</p> <p>2. Cell wall is made up of cellulose whereas cell membrane is made up of lipids and proteins.</p> <p>3. Cell wall is non-living whereas cell membrane is living.</p>		

15.	When a plasmolysed cell is placed in water, the cell absorbs water from outside due to difference in solute concentration inside and outside the cell. By absorbing water the cell becomes turgid.								
16.	Raisins in beaker A with plain water will get swollen due to endosmosis while grapes in beaker B with concentrated sugar solution will get shrink due to exosmosis.								
17.	<p>i) The apricots swell due to osmosis initially and when transferred to sugar solution shrink again due to exosmosis.</p> <p>ii) RBCs shrink due to exosmosis.</p> <p>iii) It would lead to scattering of cell organelles and there will be no functioning of the organelles.</p> <p>iv) There will be no change in cell shape or size because the cells are dead due to boiling.</p>								
18.	<table border="1"> <thead> <tr> <th>Hypotonic solution</th> <th>Isotonic solution</th> <th>Hypertonic solution</th> </tr> </thead> <tbody> <tr> <td>If the medium surrounding the cell has a higher water concentration than the cell, meaning that the outside solution is very dilute, the cell will gain water by osmosis. Such a solution is known as a hypotonic solution.</td> <td>If the medium has exactly the same water concentration as the cell, there will be no net movement of water across the cell membrane. Such a solution is known as an isotonic solution.</td> <td>If the medium has a lower concentration of water than the cell, meaning that it is a very concentrated solution, the cell will lose water by osmosis. Such a solution is known as a hypertonic solution.</td> </tr> </tbody> </table>			Hypotonic solution	Isotonic solution	Hypertonic solution	If the medium surrounding the cell has a higher water concentration than the cell, meaning that the outside solution is very dilute, the cell will gain water by osmosis. Such a solution is known as a hypotonic solution.	If the medium has exactly the same water concentration as the cell, there will be no net movement of water across the cell membrane. Such a solution is known as an isotonic solution.	If the medium has a lower concentration of water than the cell, meaning that it is a very concentrated solution, the cell will lose water by osmosis. Such a solution is known as a hypertonic solution.
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19.	It helps amoeba in engulfing food particles with help of pseudopodia.								
20.	The cell membrane or plasma membrane is a biological membrane that separates the interior of the cell from the outside environment. The plasma membrane is called as selectively permeable membrane because it regulates the movement of substances in and out of the cell. It means that the plasma membrane allows some material to pass through it while at the same time it blocks other material from entering through it.								
Prepared by Ms.Sreeja.A		CHECKED BY : HOD SCIENCE							