

## MODEL LESSON PLAN FOR ALL TYPES OF HIGH SCHOOLS

CLASS : 9<sup>th</sup>

SUBJECT: Biology

Name of the Teacher :

Name of the School:

Name of the Lesson/Unit	Topic	No. of Periods Required	Time line for teaching		Any specific Information
			From	To	
Plasma Membrane	Preparing Solution, Activity with kishmish and fresh grape	2			
	Osmosis, Filtration	2			
	Functions Of Plasma Membrane	1			
	Transportation through Plasma Membrane	2			
	Diffusion	1			

**Prior Concept/ Skills:** *(Essential concepts and skills to be checked/bridged before teaching the current concept.)*

Cell organelles, Plasma membrane, useful and harmful materials to the cell, Solute + solvent = Solution, High and low concentration, spreading of smell and fragrances, function of xylem, use of filter paper.

**Learning Outcomes:** *(Select from SCERT Academic Calendar and Textbook)*

1. Differentiates the processes diffusion and osmosis.
2. Classifies the movements of materials in plants animals.
3. Plans and conducts experiments to prove the process of osmosis in plants cell and animal cell.
4. Relates processes osmosis and diffusion with causes like high and low concentration.
5. Explains processes of osmosis and diffusion with examples.
6. Draws labelled diagrams of osmosis and diffusion with labeling.
7. Applies scientific concepts in daily life in spreading the smell of fragrance and making solutions with different concentrations,
8. Describes scientific inventions like reverse osmosis to get pure wter from salt water.
9. Designs models of plasma membrane using eco-friendly resources.
10. Records & reports experimental data objectively and honestly in the experiment of osmosis with different concentration of solutions.

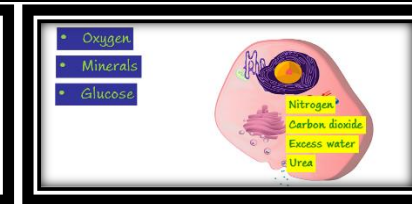
No. of Periods:

**8**

## TEACHING LEARNING PROCESS

**Induction/Introduction** (Generating interest, informing students about the outcomes and expectations for the lesson)

- Which are useful to cell?
- Which are harmful?
- Which should go to cell?
- Which should come out?



**Experience and Reflection** (Task/question that helps students explore the concept and connect with their life)

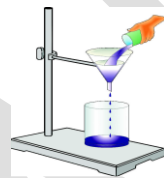
- How plant or animal can take materials inside the cell?
- How can roots absorb the water from ground?
- How plant can send the waste material to out of the cell?
- What is the process involved it which cell organelle is used?

### Explicit Teaching/Teacher Modelling (I Do)

1. Discussion on concentration of solutions.



2. Conduction of activity Discussion to compare function of filter paper with the same of plasma membrane.



3. Discussion on properties and functions of plasma membrane.

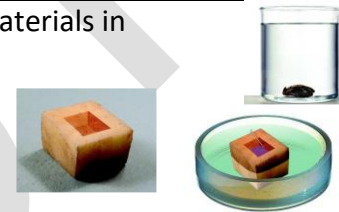
4. Discussion on reverse osmosis and importance of osmosis to living organisms.

5. Discussion on diffusion, its importance and Grahams law of diffusion.

### Group Work (We Do)

1. Conduction of activity to observe materials in different solutions (lab activity)

2. Conduction of lab activity osmosis with potato. (lab activity)



3. Conduction of experiment to observe exosmosis and endosmosis with de shelled eggs.



4. Preparation of semi permeable membrane with egg and Osmosis with egg membrane. (lab activity)



5. Activities to understand diffusion with coffee,  $\text{KMnO}_4$ , copper sulphate etc.,

6. Conduction of a field visit to a nearby RO water plant with class students and encourage them to draw the working process in the form of diagram.



### Independent Work (You Do)

1. Draw the flow chart showing process of osmosis.
2. Giving examples for osmosis and diffusion.

### Check For Understanding Questions

#### 1. Factual:

- What is osmosis?
- What is diffusion?
- What are the functions of plasma membrane?
- How the fragrance of scent spread throughout the room?

#### 2. Open Ended / Critical Thinking:

- What happens if reverse osmosis occurs in our body?
- What happens if cell stops osmosis in our body?
- What happens if marine fish kept in fresh water?
- What will happen if 50% glucose solution is injected intravenously (into vein)?

#### Student Practice Questions & Activities (Exercises from workbook / textbooks/ blackboard)

- Visit a near by RO plant and make a report on how water is purifying there?
- Make a list of daily life situations where you can observe Diffussion?
- Make a note on importance of osmosis to living organisms.
- Fill in the blanks
  - a) The smell of flowers reaches us through the process of .....
  - b) The MIC gas of Bhopal tragedy was spread throughout the city through the process of .....
  - c) Water enters the potato osmometer due to a process called .....
  - d) The fresh grape wrinkles, if kept in salt water because of .....

### TLMs (Digital + Print)

#### Resources:

- <https://youtu.be/BIWjx6VEc0E> Functioning of RO system.
- [https://www.diksha.gov.in/play/content/do\\_431343628465355980812473](https://www.diksha.gov.in/play/content/do_431343628465355980812473) cell membrane
- PPT  
Beakers, water, sugar, kishmis, knife, potato, egg, hydrochloric acid, thread, Coffee powder,  $\text{KMnO}_3$ , copper sulphate, etc.,.

#### Assessment (Think of what children SAY, DO and MAKE while learning that can form the evidence of learning to be used for assessment).

1. Write the Differences between diffusion and osmosis.
2. How can you Classify the materials based on movements like endo osmosis and exosmosis?
3. Write the procedure to prove the process of osmosis in potato and egg membrane.
4. How can you relate processes osmosis and diffusion with causes like high and low concentration?
5. Explain processes of osmosis and diffusion with examples.
6. Draw the flow chart showing the steps in activity to observe osmosis with egg membrane.
7. Give examples of three daily life activities in which osmosis is involved.
8. Describe the scientific inventions like reverse osmosis to get pure water from salt water.

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEAD MASTER

VISITING OFFICER WITH REMARKS