INDIAN SCHOOL AL WADI AL KABIR

CLASS: VII	**DEPARTMENT: SCIENCE 2026 -2027**	**DATE: 03/09/2026**
WORKSHEET NO: 6 WITH ANSWERS	**TOPIC: LIFE PROCESSES IN PLANTS**	**NOTE: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE-TYPE QUESTIONS:

1. A student places a leaf in a test tube with alcohol and then places that tube in boiling water. What is the primary reason for this specific step?
   (a) To soften the leaf for easy handling.
   (b) To enable the iodine solution to enter the cells.
   (c) To decolourise the leaf to clearly observe colour changes.
   (d) To activate the starch present in the leaf.
2. During an experiment, a plant twig is placed in water containing red ink. After one day, the red colour appears on the flowers and leaves. This confirms that transport occurs through:
   (a) Phloem, which carries dissolved minerals downward.
   (b) Xylem, which carries water and minerals upward.
   (c) Stomata, which absorb coloured water from the air.
   (d) Roots, which synthesise red pigment when in contact with ink.
3. A plant is kept in a sealed transparent bottle (Bottle Garden). It continues to grow for a long time. This is possible because:
   (a) The plant does not need to respire inside a bottle.
   (b) Oxygen produced in photosynthesis is used for respiration.
   (c) The bottle provides sunlight even in the dark.
   (d) Only water is required for the plant to grow in a sealed space.
4. If a leaf is tested with iodine and only certain green patches turn blue-black, while non-green patches do not, what is the most accurate conclusion?
   (a) Sunlight only reaches the green parts of the leaf.

(b) Non-green patches contain more starch than green patches.

(c) Chlorophyll is essential for the production of starch.

(d) Non-green leaves cannot perform respiration.

5. What was a major contribution of the Indian scientist Kamala Sohonie?

(a) Studying the effect of temperature on photosynthesis

(b) Researching respiration in plants and the nutritive values of foods

(c) Writing the ancient text *Vrikshayurveda*

(d) Discovering that stomata help in gas exchange

6. Which sequence correctly represents the movement of water from the soil to the leaves?

(a) Soil → phloem → roots → leaves

(b) Soil → roots → xylem → leaves

(c) Soil → leaves → xylem → roots

(d) Roots → soil → xylem → leaves

7. A plant receives sufficient sunlight and water but does not get enough carbon dioxide. What is most likely to happen?

(a) Photosynthesis will be affected.

(b) Respiration will completely stop.

(c) Respiration will increase.

(d) Transpiration will stop permanently.

For question numbers 8-10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below -

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

(B) Both A and R are true, but R is not the correct explanation of the assertion.

(C) A is true, but R is false.

(D) A is false, but R is true.

8. **Assertion (A):** Plants respire only at night.

Reason (R): Respiration releases energy from food for carrying out life processes.

9. **Assertion (A):** Stomata are tiny pores responsible for gas exchange.

Reason (R): Stomata are found only on the upper surface of all leaves.

10. **Assertion (A):** Phloem is responsible for transporting food from the leaves to other parts of the plant.
Reason (R): Starch is the form in which plants store their synthesised food.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. a) Why are leaves called the food factories of plants?

   [Hint: Leaves contain chlorophyll and carry out photosynthesis using sunlight, water and carbon dioxide to prepare food for the plant.]

   b) A plant is watered regularly but is still unable to survive if all its leaves are removed for a long period. Why?

   [Hint: Leaves are the main sites of photosynthesis. Without leaves, the plant cannot prepare sufficient food. Although the roots may absorb water and minerals, the plant cannot obtain enough food and energy for continued growth and survival.]

2. Why does a plant kept in darkness for a long time become weak?

   [Hint: In darkness, photosynthesis cannot take place effectively. Therefore, the plant cannot prepare sufficient food and gradually becomes weak.]

3. Why do plants need respiration even though they prepare their own food?

   [Hint: Plants need respiration to release usable energy from food. This energy is required for growth, repair, transport and other life processes.]

4. Why are stomata generally more numerous on the lower surface of many leaves?

   [Hint: The lower surface is usually less exposed to direct sunlight and wind. Having more stomata there helps reduce excessive water loss while allowing gas exchange.]

5. a) What are the visible physical changes observed in a plant as it grows?

   [Hint: Increased height, new leaves/branches, and thickening of the stem]

   b) How is food prepared by leaves transported to other parts of the plant?

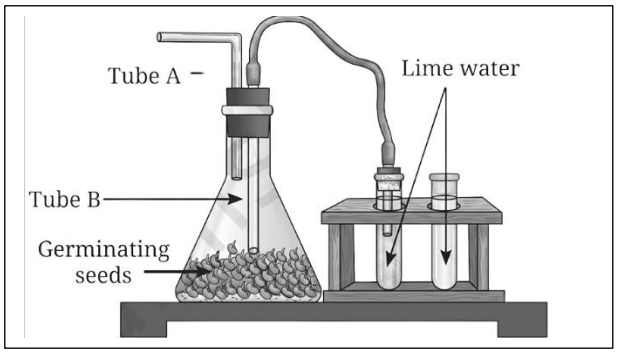
   [Hint: Food prepared in the leaves is transported to all parts of the plant through thin tube-like structures called phloem.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. Two plants are kept under identical conditions. One has broad leaves, and the other has narrow leaves. Which plant may lose more water through transpiration? Explain.

[Hint: The plant with broad leaves may lose more water because it generally has a larger surface area exposed to the surroundings. A larger leaf surface can provide greater opportunity for water loss through transpiration.]

2. Observe the experimental setup shown in the picture and answer the following question:



Why does the lime water in the test tube connected to the flask turn milky?

[Hint: The soaked moong bean seeds respire and release carbon dioxide. The carbon dioxide reacts with lime water and makes it turn milky.]

3. a) How can you test the presence of starch in a leaf?

[Hint: Boil the leaf in water for five minutes and then place it in alcohol in a test tube. Keep the test tube in a beaker of boiling water until the leaf becomes colourless. Place the leaf on a plate and add a few drops of diluted iodine solution. If the leaf turns blue-black, it indicates the presence of starch.]

b) Why is the leaf decolourised?

[Hint: The leaf is decolourised so that the colour change caused by iodine can be observed clearly.]

c) Why is the test tube containing alcohol placed in a beaker of boiling water?

[Hint: Alcohol is highly flammable and can easily lead to fire and burns.]

4. How can leaves that are not green still manufacture food?

[Hint: Leaves that are red, violet, or brown may contain chlorophyll, but its green colour is hidden by other coloured pigments. Therefore, such leaves can carry out photosynthesis and manufacture food in the form of starch. The presence of starch can be confirmed by the iodine test, in which the leaf turns blue-black.]

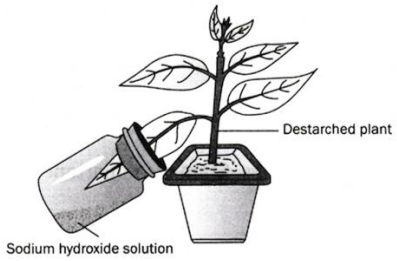
5. Describe an experiment to show that oxygen is released during photosynthesis.

[Hint: Take a water plant in a beaker filled with water and cover it with an inverted funnel and test tube.

Place one set-up in sunlight and another in the dark. In the sunlight set-up, gas bubbles are produced and collect in the inverted test tube.

The collected gas is rich in oxygen. A glowing splint relights in the collected gas, confirming the presence of oxygen. Thus, oxygen is released during photosynthesis in the presence of sunlight.]

6. In the given diagram below, what will happen to the leaf inside the bottle and why?



[Hint: No starch is formed in the leaf inside the bottle, and it will not turn blue-black when tested with iodine.

- **The bottle contains sodium hydroxide solution.**
- **Sodium hydroxide absorbs carbon dioxide from the air inside the bottle.**
- **The leaf inside the bottle does not get the carbon dioxide required for photosynthesis.**
- **Since the plant is destarched (has no stored starch initially), the leaf cannot prepare food (starch) without carbon dioxide.**
- **Therefore, no starch is formed in the leaf inside the bottle.**

Conclusion: This experiment shows that carbon dioxide is necessary for photosynthesis.]

IV. LONG ANSWER TYPE QUESTIONS (5M):

1. Plants are stationary organisms, yet they perform several life processes essential for survival. Explain how **photosynthesis, respiration, transport and transpiration** work together to support the life of a plant.

[Hint: Plants perform several interconnected life processes:

Photosynthesis: Green leaves use sunlight, carbon dioxide and water to prepare food.

Respiration: The food prepared by the plant is broken down using oxygen to release

energy for growth, repair and other activities.

Transport: Xylem carries water and minerals from the roots to the aerial parts, while phloem transports prepared food from the leaves to different parts of the plant.

Transpiration: Water vapour is lost from the leaves through stomata. This helps create a pull that assists the upward movement of water and also helps cool the plant.

Thus, these processes work together to provide food, energy, water and materials needed for the growth and survival of plants.]

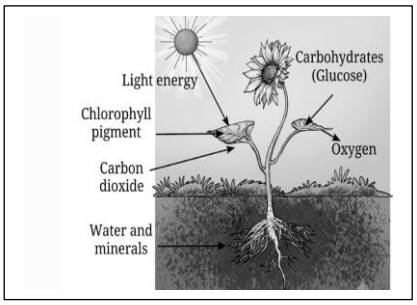
2. **Draw neat, labelled diagrams to represent the following:**

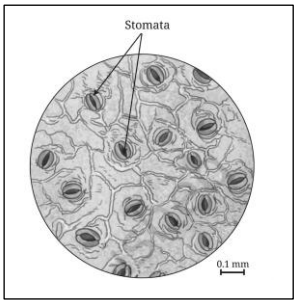
i)**Photosynthesis**

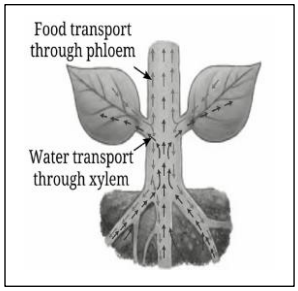
ii) **Stomata on the lower surface of a Rhoeo leaf**

iii) **Transport of water and minerals in a plant**

[Hint:







V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS

Read the passage and answer the following questions:

Bhaskar took a leaf with green and non-green patches from two plants—one kept in sunlight and one in the dark for 36 hours. He performed an iodine test. He found that only the green patches of the leaf from the sunlight-exposed plant turned blue-black.

i) Why did the leaf from the plant kept in the dark fail the iodine test?

[Hint: No sunlight meant no photosynthesis could occur to produce starch.]

ii) What does the "blue-black" colour specifically indicate?

[Hint: The presence of starch.]

iii) Why did the non-green patches of the sun-exposed leaf not change colour?

[Hint: Insufficient chlorophyll in those patches to prepare enough starch.]

ANSWERS FOR OBJECTIVE TYPE QUESTIONS [1 to 10]

1 – (c) To decolourise the leaf to clearly observe colour changes.

2 – (b) Xylem, which carries water and minerals upward.

3 – (b) Oxygen produced in photosynthesis is used for respiration.

4 – (c) Chlorophyll is essential for the production of starch.

5 – (b) Researching respiration in plants and the nutritive values of foods.

6 – (b) Soil → roots → xylem → leaves.

7 – (a) Photosynthesis will be affected.

8 – (D) A is false, but R is true.

9 – (C) A is true, but R is false.

10 - (B) Both A and R are true, but R is not the correct explanation of A

Prepared by: *Ms Suma Senu*	*Checked by:* *HOD Science*