

# WORKSHEET 1

## CHAPTER 6 – RESPIRATION IN PLANTS

### A. Name the following.

1. A common step in both aerobic and anaerobic respiration.
2. A chemical which absorbs carbon dioxide from air.
3. Site where Krebs cycle occurs in a cell.
4. Special structures present on plant cuticle to facilitate gaseous exchange.
5. Energy currency of cell.

### B. Give reasons.

1. Anaerobic respiration is a less efficient process.
2. Yeast is used for manufacturing wine.
3. Respiration occurs at optimum temperature.
4. Glycolysis is an important stage of respiration.
5. It is difficult to demonstrate respiration in green plants.

### C. Choose the correct option.

1. Anaerobic respiration of yeast produces
  - a. nitrogen gas.
  - b. oxygen gas.
  - c. carbon dioxide.
  - d. water vapour.
2. Glycolysis occurs in
  - a. nerve cells.
  - b. muscle cells.
  - c. eukaryotic cells.
  - d. all cells.
3. The number of ATP produced during aerobic respiration are
  - a. 2.
  - b. 36.
  - c. 38.
  - d. 4.
4. The correct equation for aerobic respiration is
  - a.  $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$
  - b.  $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$
  - c.  $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2O_2$
  - d.  $6CO_2 + 10H_2O \rightarrow C_6H_{12}O_6 + 6H_2O + 6O_2$
5. The end product of glycolysis is
  - a. carbon dioxide.
  - b. oxygen.
  - c. pyruvic acid.
  - d. lactic acid.

### D. Fill in the blanks.

1. Respiration is a \_\_\_\_\_ process.
2. \_\_\_\_\_ is a respiratory substrate.
3. \_\_\_\_\_ solution turns milky when  $CO_2$  is passed through it.
4. \_\_\_\_\_ is used to create vacuum to show anaerobic respiration.
5. Rate of \_\_\_\_\_ is more than the rate of \_\_\_\_\_ in the daytime in the case of green plants.

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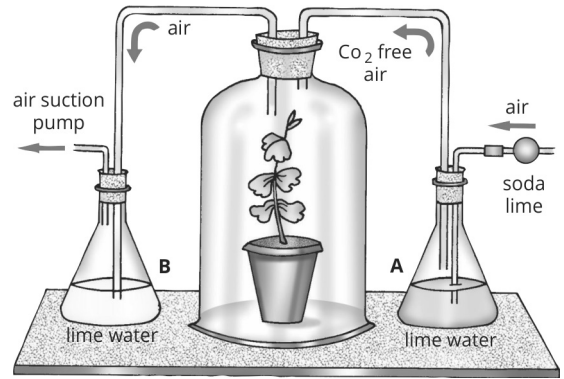
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E. The apparatus given below was set-up to demonstrate a particular process occurring in plants. Study the same and then answer these questions.

1. Name the process.
2. What is the object of the experiment?
3. What is the function of soda lime placed in the tube?
4. What change, if any, would you observe in the lime water in flask A and in flask B? In each case give a reason for your answer.
5. Mention one precaution that should be taken to ensure accurate results.
6. Give an overall balanced chemical equation to represent the physiological process.



# ANSWERS

## WORKSHEET 1

### A. Name the following.

1. Glycolysis
2. Potassium hydroxide
3. Mitochondria
4. Lenticels
5. ATP

### B. Give reasons.

1. During anaerobic respiration, incomplete breakdown of glucose takes place resulting in release of less energy (ATP). Hence, it is a less efficient process.
2. Yeast converts glucose or sugar into alcohol and carbon dioxide in the absence of oxygen through the process of fermentation. Hence, it is used in the wine industry.
3. Respiration is a catabolic process which requires enzymes. All enzymes work efficiently at optimum temperature. At high temperature, the enzymes denature and at low temperature, they do not function properly. Hence, optimum temperature is required for respiration.
4. Glycolysis is the first step in respiration which breaks down glucose into pyruvate in the cytosol of our cell. This step is completely anaerobic, that is oxygen independent. The pyruvate thus produced is common to both aerobic and anaerobic respiration. Hence, glycolysis is considered an important stage of respiration.
5. During day time, both respiration and photosynthesis takes place in green plants. Evolution of carbon dioxide is an indicator to demonstrate respiration in living organisms. However, carbon dioxide produced during respiration in green plants get utilized during photosynthesis during day time and thus there is no evolution of carbon dioxide. Therefore, it is difficult to demonstrate respiration in green plants as there is no evolution of carbon dioxide during day time.

### C. Choose the correct option.

1. c.
2. d.
3. c.
4. a.
5. c.

### D. Fill in the blanks.

1. catabolic
2. Lime water
3. Glucose
4. Caustic potash (KOH)
5. photosynthesis, respiration

### E. The apparatus given below was set-up to demonstrate a particular process occurring in plants. Study the same and then answer these questions.

1. Respiration
2. The object is to show that carbon dioxide is given out during respiration.
3. Soda lime in the tube absorbs carbon dioxide from the incoming air to provide the plant air free of carbon dioxide.
4. The lime water in flask B turns milky as the plant respire and gives out carbon dioxide which turns lime water milky. The lime water in flask A remains clear as the incoming air is free of carbon dioxide.
5. The respiratory experiment should be carried out in dark or the bell jar should be completely covered by a piece of black cloth to prevent photosynthesis.
6.  $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 38ATP$