WORKSHEET 1

CHAPTER 1 – LIFE PROCESSES (II) RESPIRATION

A. Tick (✓) the correct option.

1. Which of the following is not a 3-carbon molecule?
   a. Pyruvate b. Ethanol c. Lactic acid d. None of the above
2. Which of the following respiratory structure has cartilaginous rings to prevent it from collapsing?
   a. Nasal cavity b. Pharynx c. Larynx d. Trachea
3. Which of the following structures increase the total surface area for the exchange of gases in the lungs?
   a. Bronchi b. Alveoli c. Bronchioles d. Trachea
4. The final product of glycolysis is
   a. lactic acid. b. glucose. c. ethanol. d. pyruvate.
5. Gaseous exchange in fish takes place through the
   a. trachea. b. lungs. c. gills. d. alveoli.

B. Fill in the blanks.

1. Yeast undergoes glycolysis _____ respiration whereas *Amoeba* undergoes _____ respiration.
2. In insects, gaseous exchange occurs through a system of tubes called _____
3. The actual exchange of gases takes place in the _____ of the lungs.
4. In plants, respiration occurs at a much _____ rate than in animals.
5. The complete process of anaerobic respiration takes place in _____

C. State true (T) or false (F).

1. As compared to aerobic respiration, anaerobic respiration produces more energy.
2. Earthworm respires through gills.
3. Inhalation occurs when diaphragm is elevated.
4. Pharynx is a common passage for air and food.
5. Lungs lie in the thoracic cavity.

D. Match the following.

1. Cockroach	(*a*) ATP
2. Human muscles	(*b*) spiracles
3. Mitochondria	(*c*) lungs
4. Mammals	(*d*) epiglottis
5. Larynx	(*e*) lactic acid

Name: ..... Teacher's signature: .....

Class: X Date: .....

E. Answer the following questions.

1. Give reasons:
   (*i*) Plants die under waterlogged condition.
   (*ii*) Rate of breathing in aquatic organism is much faster than in terrestrial organisms.
2. What happens to pyruvate when oxygen is available?
3. Discuss the exchange of gases in plants.
4. Differentiate between aerobic and anaerobic respiration. Name some organism that use anaerobic mode of nutrition.
5. Explain why plants have low energy needs as compared to animals.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

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

B. Fill in the blanks.

1. Anaerobic, aerobic 2. Tracheal system 3. Alveoli 4. Slower 5. Cytoplasm

C. State true (T) or false (F).

1. F 2. F 3. F 4. T 5. T

D. Match the following.

1. (*b*) 2. (*e*) 3. (*a*) 4. (*c*) 5. (*d*)

E. Answer the following questions.

1. (*i*) Roots of plants breathe by exchange of gases in the air spaces between soil particles. During waterlogged condition, soil gets saturated with water resulting in deficiency of oxygen in the soil. Hence plant will die due to anaerobic condition in the soil.

   (*ii*) Since the amount of dissolved oxygen in fairly low compared to the amount of oxygen in the air, the rate of breathing in aquatic organisms is much faster than that in terrestrial organisms.

2. In presence of oxygen, pyruvate completely breaks down to carbon dioxide and water vapour in the mitochondria along with release of energy in the form of ATP.

3. In plants, all parts of the plant like root, stem and leaf respire day and night in order to survive. Plants exchange gases through stomata and the large intercellular spaces ensures that all cells are in contact with air. Carbon dioxide and oxygen are exchanged by diffusion here. They can go into the cells, or away from them and out into the air. The direction of diffusion depends upon the environmental conditions and the requirements of the plant. Certain woody plants do not have stomata. In such case, exchange of gases occur through tiny pores on the bark on stem called lenticels.

4.

	Aerobic respiration	Anaerobic respiration
(*i*)	Occurs in presence of free oxygen.	Occurs in absence of oxygen.
(*ii*)	Occurs in mitochondria.	Occurs in cytoplasm.
(*iii*)	Complete breakdown of food takes place.	Incomplete breakdown of food takes place.
(*iv*)	38 ATP molecules generated by oxidation of one molecule of glucose.	2 ATP molecules generated by oxidation of one molecule of glucose.
(*v*)	End products are CO_2 and H_2O.	End products are ethyl alcohol and CO_2 in yeast and lactic acid in human muscles.

5. Plants do not move and plant bodies have a large proportion of dead cells in many tissues. As a result, plants have low energy needs.