WORKSHEET 2

CHAPTER 1 – LIFE PROCESSES (II) RESPIRATION

A. Tick (✓) the correct option.

1. Glycolysis takes place in the
   a. nucleus. b. cytoplasm. c. mitochondria. d. vacuole.
2. Which of the following acid is the end product of fermentation?
   a. Hydrochloric acid b. Lactic acid c. Pyruvic acid d. Citric acid
3. The two organisms which breathe only through their moist skin are
   a. fish and frog. b. frog and earthworm.
   c. leech and earthworm. d. fish and earthworm.
4. The breathing and respiration in woody stem of a plant takes place through
   a. root hair. b. lenticels. c. closed stomata. d. open stomata.
5. In cockroaches, air enters the body through
   a. lungs. b. gills. c. spiracles. d. skin.

B. Fill in the blanks.

1. Glucose is completely oxidized into CO_2, H_2O and energy during _____
2. The opening leading to larynx is called _____
3. Accumulation of excess _____ in the muscles cause pain.
4. The lungs are covered by _____
5. The chest cavity is separated from the abdominal cavity by the _____

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

1. Carbon monoxide binds more strongly to haemoglobin than oxygen.
2. Our chest cavity becomes smaller when we breathe in.
3. Pyruvate is formed in mitochondria.
4. Different parts of a plant respire independently.
5. The lungs always contain residual volume of air.

D. Match the following.

1. Glycolysis	(*a*) cartilaginous ring
2. Mitochondria	(*b*) balloon-like structure
3. Yeast	(*c*) cytoplasm
4. Trachea	(*d*) fermentation
5. Alveoli	(*e*) ATP synthesis

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

Class: X Date: .....

E. Answer the following questions.

1. Differentiate between respiration and breathing.
2. How are alveoli designed to maximize the exchange of gases?
3. Give reactions to show breakdown of glucose by various pathways during respiration.
4. Draw a well labelled diagram of human respiratory system.
5. Write any two points of difference between respiration in plants and respiration in animals.

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

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

B. Fill in the blanks.

1. Aerobic respiration 2. Glottis 3. Lactic acid 4. Pleural membrane 5. Diaphragm

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

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

D. Match the following.

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

E. Answer the following questions.

1.

	Breathing	Respiration
(*i*)	Breathing is the process of taking in oxygen and expelling out carbon dioxide.	Respiration is the process of oxidation of glucose with the release of energy.
(*ii*)	It is a physical process.	It is a biochemical process.
(*iii*)	Occurs at organ level.	Occurs at cellular level.
(*iv*)	Utilizes ATP	Produces ATP

2. Alveoli provides large surface area and have a dense network of blood capillaries for exchange of gases.

3. $\underset{\substack{\text{glucose}\\\text{(6-carbon molecule)}}}{C_6H_{12}O_6} \xrightarrow[\text{no } O_2 \text{ required}]{\text{glycolysis, cytoplasm}} \underset{\text{(3-carbon molecule)}}{2\ \text{Pyruvate}} \xrightarrow[6O_2\ \text{(in presence of oxygen)}]{\text{in mitochondria}} \underset{\text{carbon dioxide}}{6\ CO_2} + \underset{\text{water}}{6\ H_2O} + \underset{\text{(38 ATP)}}{\text{Energy}}$

Reaction 1

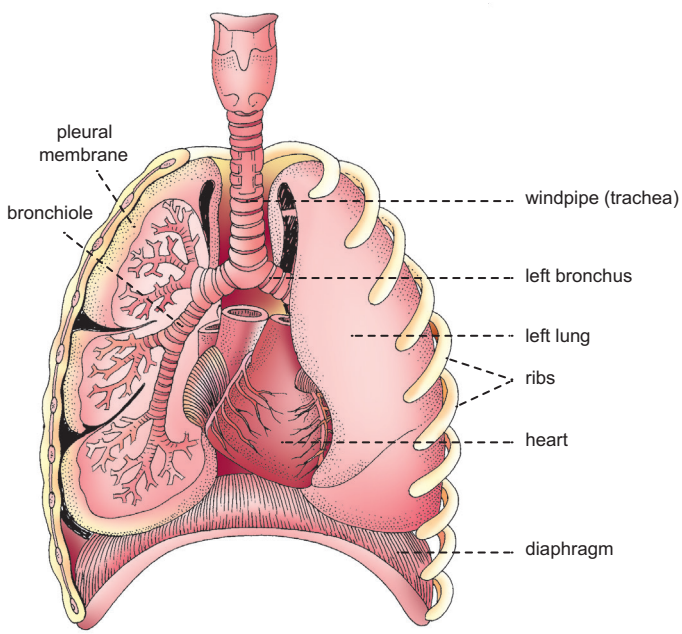
$\underset{\substack{\text{glucose}\\\text{(6-carbon molecule)}}}{C_6H_{12}O_6} \xrightarrow[\text{no } O_2 \text{ required}]{\text{glycolysis, cytoplasm}} \underset{\text{(3-carbon molecule)}}{2\ \text{Pyruvate}} \xrightarrow[\text{no } O_2 \text{ required}]{\text{in cytoplasm}} \underset{\substack{\text{ethyl alcohol}\\\text{(2-carbon molecule)}}}{2\ C_2H_5OH} + \underset{\text{carbon dioxide}}{2\ CO_2} + \underset{\text{(2 ATP)}}{\text{Energy}}$

Reaction 2

$\underset{\substack{\text{glucose}\\\text{(6-carbon molecule)}}}{C_6H_{12}O_6} \xrightarrow[\text{no } O_2 \text{ required}]{\text{glycolysis, cytoplasm}} \underset{\text{(3-carbon molecule)}}{\text{Pyruvate}} \xrightarrow[\text{lack of oxygen}]{\text{in cytoplasm}} \underset{\substack{\text{lactic acid}\\\text{(3-carbon molecule)}}}{2\ C_3H_6O_3} + \underset{\text{(2 ATP)}}{\text{Energy}}$

Reaction 3

4. The respiratory system



5. (*i*) Plants respire at a slower rate than animals.

   (*ii*) All parts of the plant, leaf, stem and root perform respiration individually while animals respire through a common respiratory system.