	INDIAN SCHOOL AL WADI AL KABIR	
Class: X	**DEPARTMENT OF SCIENCE -2022-23** **SUBJECT: BIOLOGY**	DATE OF COMPLETION: 08.05.2022
WORKSHEET NO:1 WITH ANSWERS	**TOPIC: LIFE PROCESSES (NUTRITION & RESPIRATION)**	**A4 FILE FORMAT** **(PORTFOLIO)**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

I OBJECTIVE TYPE QUESTIONS

Ia. Fill in the blanks:

1. The processes which together perform this maintenance job are_____.
2. Complex substances have to be broken down into simpler ones. To achieve this, organisms use bio-catalysts called_____.
3. The desert plants take up carbon dioxide at night and prepare an _____which is acted upon by the energy absorbed by the chlorophyll during the day.
4. _____, which is also a unicellular organism, the cell has a definite shape and food is taken in at a specific spot.
5. This build-up of_____ in our muscles during sudden activity causes cramps.
6. When air is taken in and let out, the lungs always contain a _____of air so that there is sufficient time for oxygen to be absorbed and for the carbon dioxide to be released.

Ib. Multiple choice questions:

7. In human beings, the respiratory pigment which has a very high affinity for oxygen.
   (a) Carboxyhaemoglobin (b) Oxyhaemoglobin (c) Haemoglobin (d) Chlorophyll

8. It provide a surface where the exchange of gases can take place.

   (a) Bronchi (b) Bronchioles (c) Trachea (d) Alveoli

9. The pyruvate may be converted into ethanol and carbon dioxide. This process takes place in yeast during –

   (a) Fermentation (b) Respiration (c) Digestion (d) Excretion

10. The inner lining of the small intestine has numerous finger-like projections called

    (a) Gall bladder (b) intestinal glands (c) Gastric glands (d) Villi

Ic. ASSERTION AND REASONING:

For the questions 11to 13,two statements are given-one labelled Assertion (A) and the other labelled Reason(R).Select the correct answer to these questions from the options (i) , (ii) ,(iii) and (iv)as given below:

(i)Both A and R are true and R is the correct explanation of the assertion.
(ii)Both A and R are true but R is not the correct explanation of the assertion.
(iii)A is true but R is false.
(iv)A is false but R is true.

11. **Assertion:** In anaerobic respiration, one of the end products is alcohol.
Reason: This is because of incomplete breakdown of glucose.

12. **Assertion**: The food coming from the stomach is acidic and has to be made alkaline.
Reason: Bile juice from the liver accomplishes this in addition to acting on fats.

13. **Assertion**: Some organisms break-down food material outside the body and then absorb it.
Reason: This parasitic nutritive strategy is used by a wide variety of organisms.

14. **Assertion**: The opening and closing of the pore is a function of the guard cells.
Reason: Guard cells are specialized plant cells in the epidermis of leaves and stems.

15. **Assertion:** Desert plants take up carbon dioxide at night and prepare an intermediate.
Reason: Other plants take up carbon dioxide during the day and prepare carbohydrates.

16. **Id. PASSAGE BASED QUESTIONS:**

Like bacteria, protozoans are unicellular organisms, but their method of feeding is quite different. They ingest relatively large particles of food and carry out intracellular digestion (digestion inside cells) through a method of feeding called phagotrophic nutrition. Many protozoans also are osmotrophic to a lesser degree. Some organisms, such as amoebas, have pseudopodia ("false feet") that flow around the food particle until it is completely enclosed in a membrane-bounded chamber called a food vacuole; this process is called phagocytosis. Other protozoans, such as paramecia, pinch off food vacuoles from the end of a prominent oral groove into which food particles are drawn by the beating of numerous small hair like projections called cilia. In still other cases of phagotrophic nutrition, tiny particles of food adhere to the membranous surface of the cell, which then folds inward and is pinched off as a vacuole; this process is called pinocytosis. The food particles contained in vacuoles formed through phagocytosis or pinocytosis have not entered the cell in the fullest sense until they have been digested into molecules able to cross the membrane of the vacuole and become incorporated into the cellular substance. This is accomplished by enzyme-containing organelles called lysosomes, which fuse with the vacuoles and convert food into simpler compounds.

i. What is the method of feeding in bacteria and protozoans called?

ii. How does the pseudopodia in amoeba help in injecting food?

iii. How do paramecia obtain their food?

iv. What happens tiny particles of food adhering to the membrane surface of the cell?

II. VERY SHORT ANSWERS TYPE QUESTIONS CARRYING 1 MARK EACH

17. Which is the longest part of the alimentary canal?

18. What is the function of mucus secreted by gastric juice?

19.What is the function of rings of trachea?

20.What happens to the ribs and diaphragm when we breathe in?

21. Where does the first step is the break-down of glucose into pyruvate take place?

III. SHORT ANSWER TYPE QUESTIONS CARRYING 3 MARKS EACH

22. In single celled organisms' diffusion is sufficient to meet all their requirements of food, exchange of gases or removal of wastes but it is not in case of multicellular organisms. Explain the reason for this difference.**?**

23. State the role of the following in human digestive system:
(i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi**?**

24. Mention the raw materials required for photosynthesis**.**

25. Differentiate between Aerobic and Anaerobic respiration.

26. Differentiate between inhalation and exhalation.

IV. LONG ANSWER TYPE QUESTIONS CARRYING 5 MARKS EACH

27. (a) Draw a diagram of human respiratory system and label the following:
(i) part where air is filtered by fine hair and mucus
(ii) part which terminates in balloon – like structures
(iii) balloon – like structures where exchange of gases takes place.
(iv) part which separates chest cavity from abdominal cavity.
(b) Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?
28. Explain the process of nutrition in Amoeba.
29. (a) List the three events that occur during the process of photosynthesis.
Explain the role of stomata in this process.
(b) Describe an experiment to show that "sunlight is essential for photosynthesis."
30. (a) Draw a diagram to show open stomatal pore and label on it:
(i) guard cells
(ii) chloroplast
(b) State two functions of stomata.
(c) How do guard cells regulate the opening and closing of stomatal pore?

V. BOARD BASED QUESTIONS.

31. A variegated leaf with green and yellow patches in used for an experiment to prove that chlorophyll is required for photosynthesis. Before the experiment the green portions (A), and the pale-yellow portions (B), are observed. What will be the colour of 'A' just before and after the starch test? Also write the equation of photosynthesis and mark, as well as validate from which molecule the by-product is obtained.

32. Name a common nutrient that is absorbed in the small intestine and reabsorbed by the kidney tubules.
(1)

ANSWERS

1.	life processes
2.	enzymes
3.	intermediate
4.	Paramoecium
5.	lactic acid
6.	residual volume
7.	(c) Haemoglobin
8.	(d) Alveoli
9.	(a) Fermentation
10.	(d) Villi
11.	(i)Both A and R are true and R is the correct explanation of the assertion.
12.	(i)Both A and R are true and R is the correct explanation of the assertion.
13.	(iii)A is true but R is false.
14.	(ii)Both A and R are true but R is not the correct explanation of the assertion.
15.	(i)Both A and R are true and R is the correct explanation of the assertion.
16.	i. method of feeding is called phagotrophic nutrition

	ii. pseudopodia flow around the food particle until it is completely enclosed in a membrane-bounded chamber called a food vacuole iii. They pinch off food vacuoles from the end of a prominent oral groove into which food particles are drawn by the beating of numerous small hairs like projections called cilia. iv. tiny particles of food adhere to the membranous surface of the cell, which then folds inward and is pinched off as a vacuole; this process is called pinocytosis.
17.	Small intestine
18.	The mucus protects the inner lining of the stomach from the action of the acid under normal conditions.
19.	Rings of cartilage are present in the trachea. These ensure that the air-passage does not collapse.
20.	We lift our ribs and flatten our diaphragm, and the chest cavity becomes larger……
21.	Cytoplasm
22.	In unicellular organisms, no specific organs for taking in food, exchange of gases or removal of wastes may be needed because the entire surface of the organism is in contact with the environment. But in multi-cellular organisms like humans, all the cells may not be in direct contact with the surrounding environment. Thus, simple diffusion will not meet the requirements of all the cells of human body quickly
23.	(i) Digestive enzymes - Digestive enzymes **help with the breakdown of food so that the nutrients contained within the food can be absorbed**. It works by breaking down large macromolecules such as protein, fat and carbohydrates into their smaller building blocks so that they can be absorbed by the body. (ii) Hydrochloric Acid – Activates the protein digesting enzyme Pepsin and kills germs (iii) Villi - The tiny projections on the inner surface of the small intestine which help in absorbing the digested food are called villi. These helps to increase the surface area of intestinal walls.

24. Photosynthesis requires **sunlight, chlorophyll, water, and carbon dioxide gas** as raw materials.

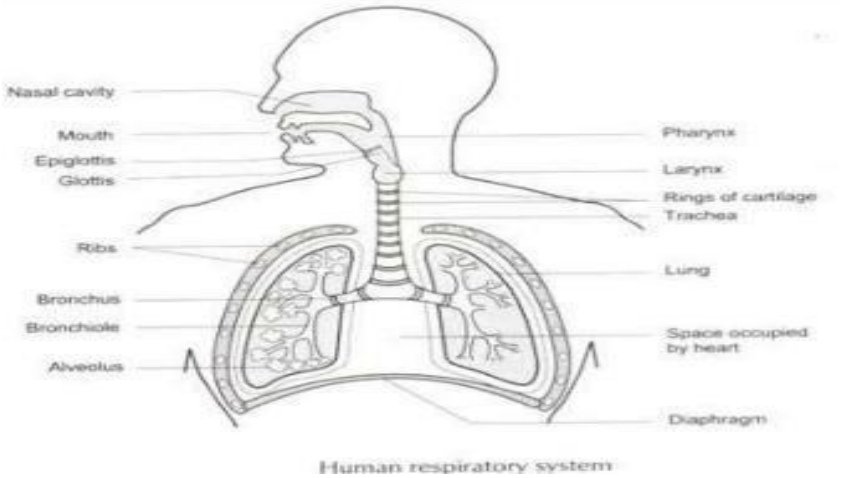
25.

Aerobic respiration	Anaerobic respiration
1) It takes place in the presence of oxygen.	1) It takes place in the absence of oxygen.
2) In aerobic respiration, complete oxidation of glucose takes place.	2) In anaerobic respiration, the glucose molecule is incompletely oxidised.
3) End products are CO_2 and water.	3) End products are either ethyl alcohol or lactic acid and CO_2.
4) Lot of energy is liberated (38 ATP).	4) Relatively small energy is liberated (2 ATP).
5) It occurs in plant's and animal's cells.	5) Occurs in many anaerobic bacteria and human muscle cells.
6) $C_6H_{12}O_6 + 6O_2 \rightarrow 6\,CO_2 + 6H_2O + 686$ K.cal	6) $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + 56$ K.cal

26.

Inhalation	Exhalation
• Intercostal muscles contract, lifting rib cage up and out • Diaphragm contracts and pulls downward • The lungs expand, air is sucked in	• Intercostal muscles relax • Diaphragm relaxes • The ribs fall downward and inward • Diaphragm back into dome shape, squeezing lungs and pushing air out

27.



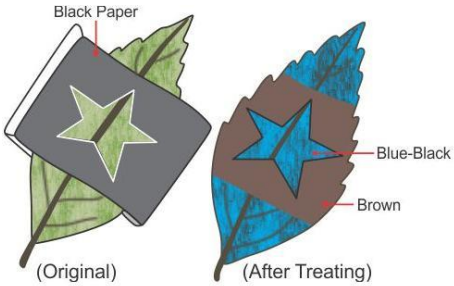
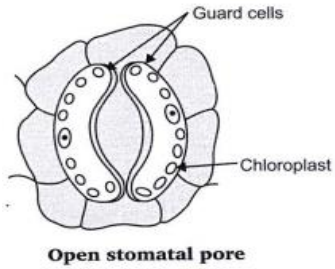
Human respiratory system

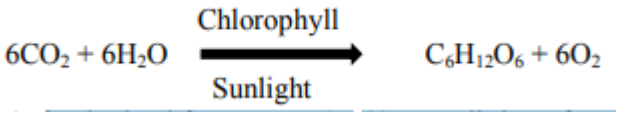
(i) N**ostrils**

(ii) Bronchioles

(iii) Alveoli

	(iv) Diaphragm
28.	The process of nutrition in Amoeba is called **Holozoic nutrition and the process of taking in food is known as phagocytosis.** This takes place in the following steps: 1**. Ingestion:** Intake of food into the body is known as Ingestion. Amoeba is unicellular and hence it does not have a mouth, it takes the food into the body by forming structures called pseudopodia around the food particle. This pseudopodium forms a vacuole around the food particle called food vacuole and the vacuole is taken inside the cell. 2. **Digestion:** The food particle inside the vacuole is broken down into its soluble particles by the digestive enzymes present inside the vacuoles. 3. **Absorption:** The broken food particles are absorbed into the cytoplasm of the Amoeba by the process of diffusion. The food particles which are unabsorbed are left inside the vacuole. 4. **Assimilation:** The absorbed food is converted into energy. 5. **Egestion:** The undigested food in the food vacuole is removed from the cell.
29.	(a) **The events that occur during the process of photosynthesis are:** (i) Absorption of light energy by chlorophyll. (ii) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen. (iii) Reduction of carbon dioxide to carbohydrates. Stomata **facilitate carbon dioxide uptake and release of oxygen during** the process of photosynthesis. (b) Take a plant with de-starched leaf. Leaf is partially covered with black paper on which a design is cut. Expose this plant to sunlight for few hours and perform a starch test with iodine solution. Observation- Covered leaf part shows brown colouration.

	Exposed leaf shows blue-black colour. Result- Starch is present in the exposed leaf. Conclusion- Leaf exposed to sunlight give iodine test, proving that sunlight is necessary for photosynthesis. 
30.	(a)  **Open stomatal pore** (b) The main functions of stomata are: Gaseous exchange- Stomatal opening and closure help in the gaseous exchange between the plant and surrounding. It helps in transpiration and removal of excess water in the form of water vapour. Stomatal closure at night prevents water from escaping through pores. c) The guard cells regulate the opening and closing of stomatal pores by the osmosis process. When water flows into the guard cells, they swell up and the curved surface causes the stomata to open. When the guard cells lose water, they shrink and become flaccid and straight thus closing the stomata.
31.	Just before Starch test – Pale yellow Just after Starch test – Blue black

	 O_2 is obtained from water (H2O), as splitting of water results in formation of Hydrogen (used for making glucose) and oxygen (by-product).
32.	Glucose/Amino acids

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