

Exercises

(A) Fill in the blanks :

1. upper
2. anaerobic
3. spiracles
4. gills
5. exhalation
6. cutaneous

(B) Choose the correct option from each of the following :

1. External respiration includes:

Ans. both (a) & (b)

2. Spiracles on the sides of the body are seen in:

Ans. cockroaches

3. The following help in breathing:

Ans. both (a) & (b)

4. Oxygen is taken in and carbon dioxide is given out in :

Ans. lungs

5. Unicellular organisms respire, with the process of:

Ans. diffusion

(C) Match the following: (Ans.)

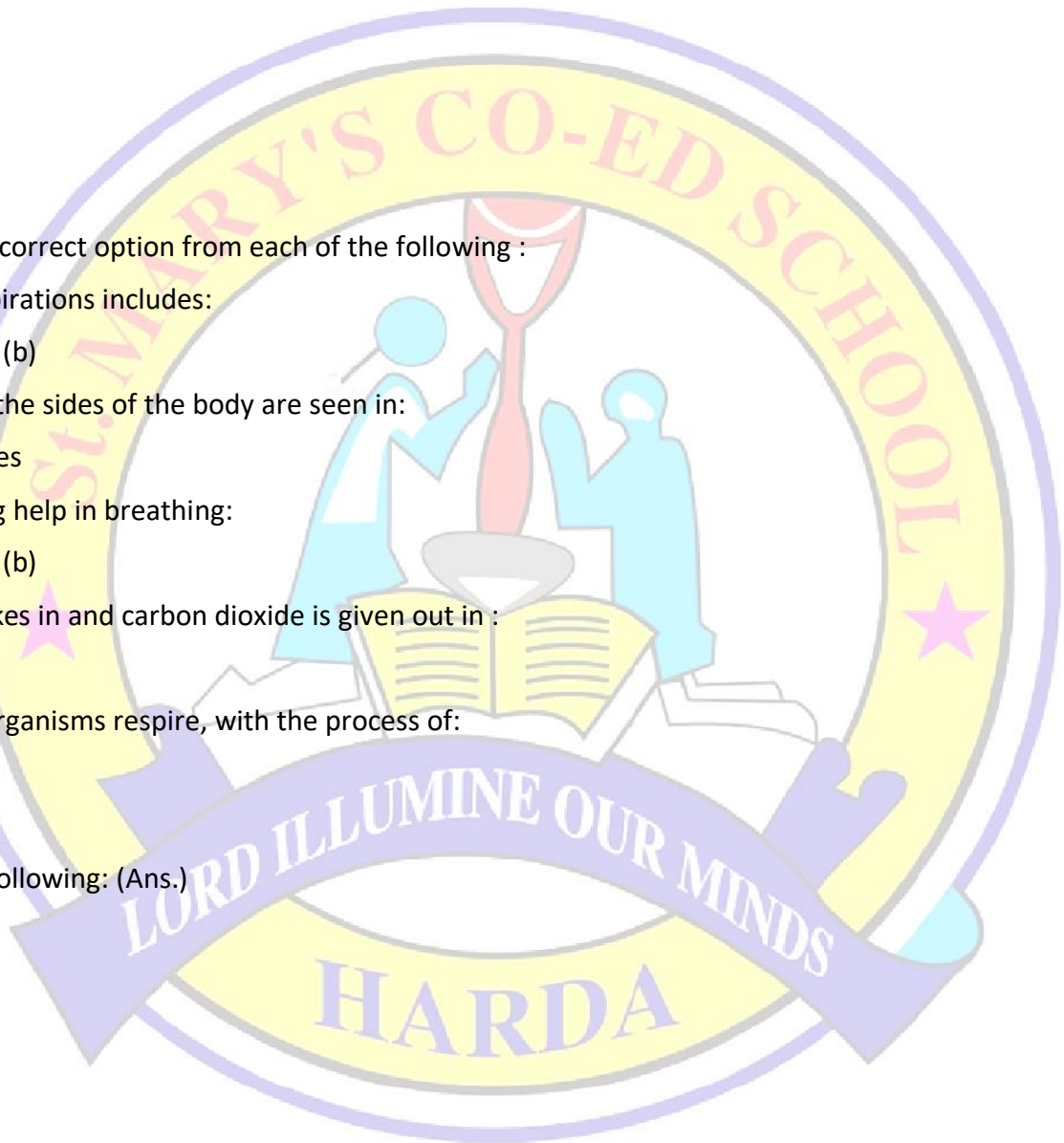
1. alcohol
2. spiracles
3. moist skin
4. lungs
5. Lactic acid

(D) Distinguish between:

1. Combustion and respiration

. Combustion :

1. It is a fast process and releases the energy in the form of heat and light.
2. No, any enzymes are required to burn fuel.
3. It needs high temperature for fire to start.



Respiration:

1. The process which the food is burned or oxidized in the presence of oxygen to release energy , carbon-dioxide & water.
2. Enzymes are required to burn fuel.
3. Energy is given out and glucose is broken down.

(2) photosynthesis and respiration in plants

Photosynthesis :

1. Takes place only in plants.
2. This process needs chloroplast.
3. Glucose (a carbohydrate) is made.
4. Sunlight is needed to provide the energy.

Respiration:

1. Takes place in all the living organisms.
2. This process needs mitochondria.
3. Glucose is broken down.
4. Energy is given out and sunlight is not needed.

(3) Aerobic and Anaerobic respiration:

Aerobic respiration:

1. Takes place in the presence of oxygen.
2. Release more energy during the oxidation because the food is completely burnt.
3. The end products are carbon-dioxide and water.

Anaerobic respiration:

1. Takes place in the absence of oxygen.
2. Release less energy during the oxidation because of incomplete oxidation.
3. The end products are ethanol or lactic acid besides carbon dioxide and water.

(4) Inspiration and Expiration

Inspiration :

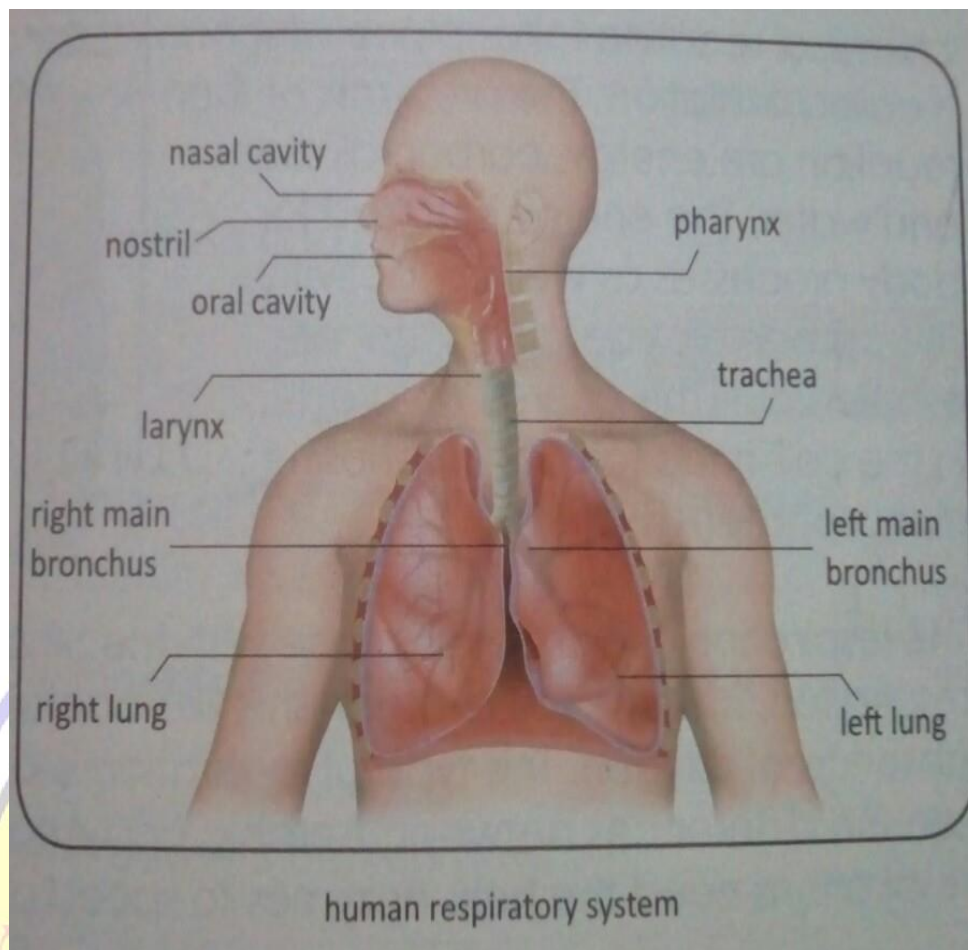
1. When lungs expand the air goes in and it is called inspiration or inhalation.
2. During inspiration the diaphragm moves down and the ribs move outward.

Expiration:

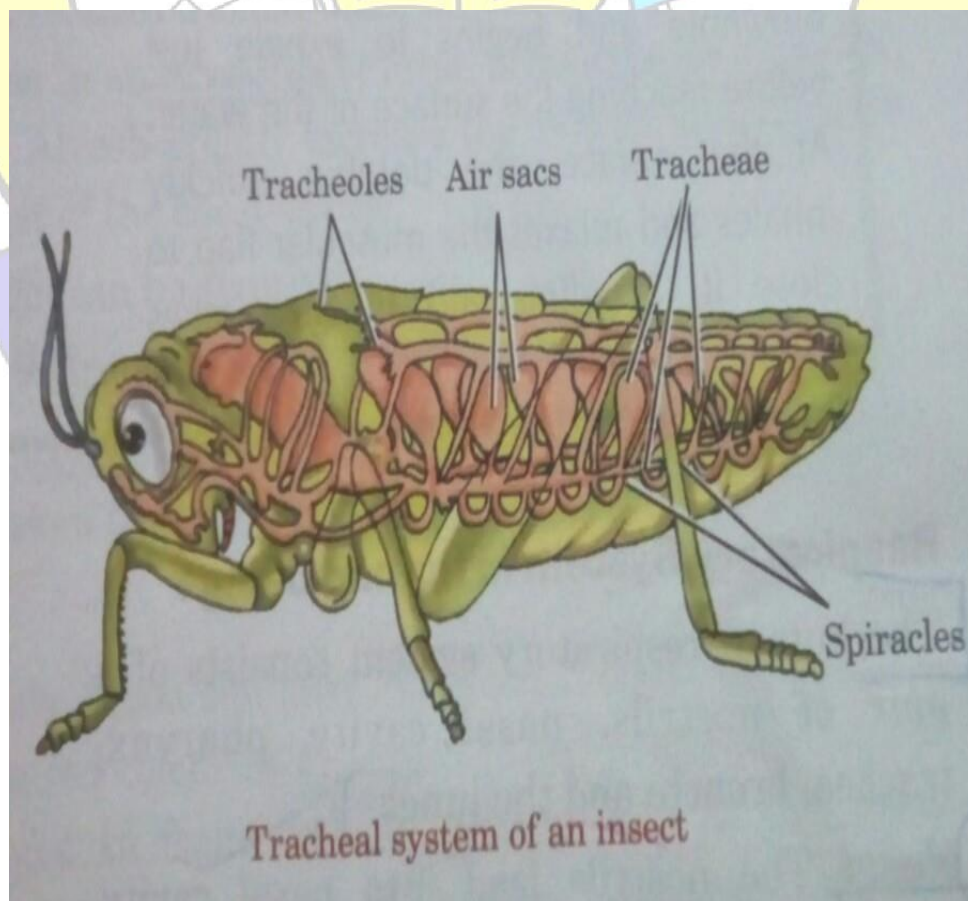
1. When the lungs contract air is rushed out and it is known as exhalation or expiration.
2. During expiration, the diaphragm moves up and ribs move inward.

(E) Draw the following:

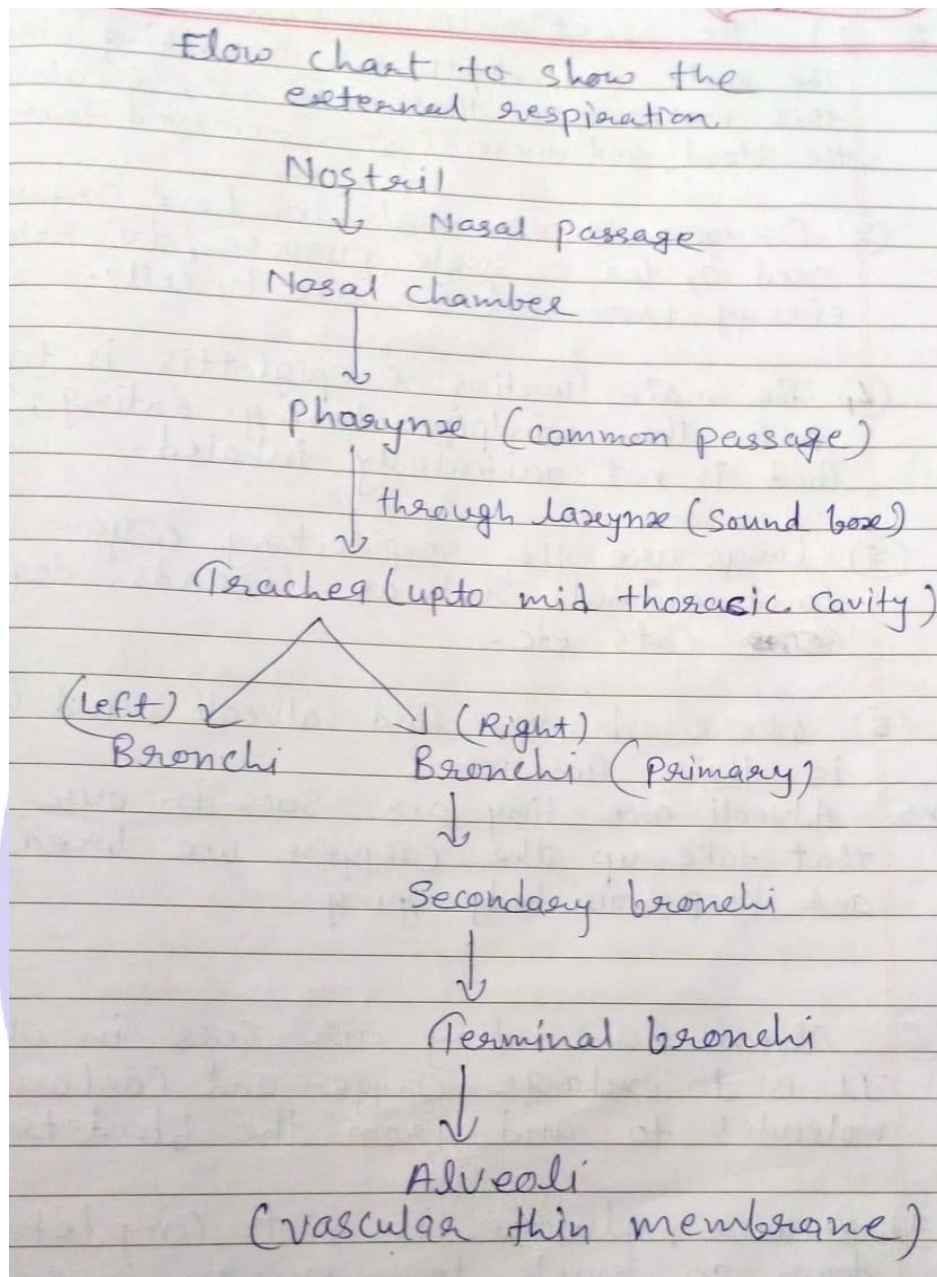
1. Human respiratory system



2. Cockroach showing spiracles :



3. Flow chart to show the external respiration or breathing :



(F) Answer in short :

1. The heart rate increases during exercise. The rate and depth of breathing increases, this make sure that more oxygen is absorbed into the blood, and more carbon dioxide is removed from it.

2. When lungs expand, the air goes in and it is called inspiration or inhalation. During inspiration, the diaphragm moves down and the ribs move outward.
3. Oxygen is essential to have organisms need oxygen for a single purpose, to release energy from food for use by cells.
4. The main function of epiglottis is to seal off the windpipe during eating, so that food is not accidentally inhaled.
5. Lungs are the respiratory organs of many land animals such as lizards, dogs, frogs, cats etc.
6. Alveoli are tiny air sacs in our lungs it is to exchange oxygen and carbon dioxide molecules to and from the bloodstream.
7. Because, glucose is not completely broken down, so much less energy is released during anaerobic respiration.

(G) Answer in detail : (Answers)

1. Plants respire through stomata present in the under surface of the leaves. Young stems have stomata on the outer surface but in old and woody trees, big opening known as lenticels are seen which help the tree in respiration. The plants too need oxygen to respire. In root system, the roots divide repeatedly and extend in many directions. The root hair takes in oxygen from the soil and passes it on to the other cells through a process known as diffusion.

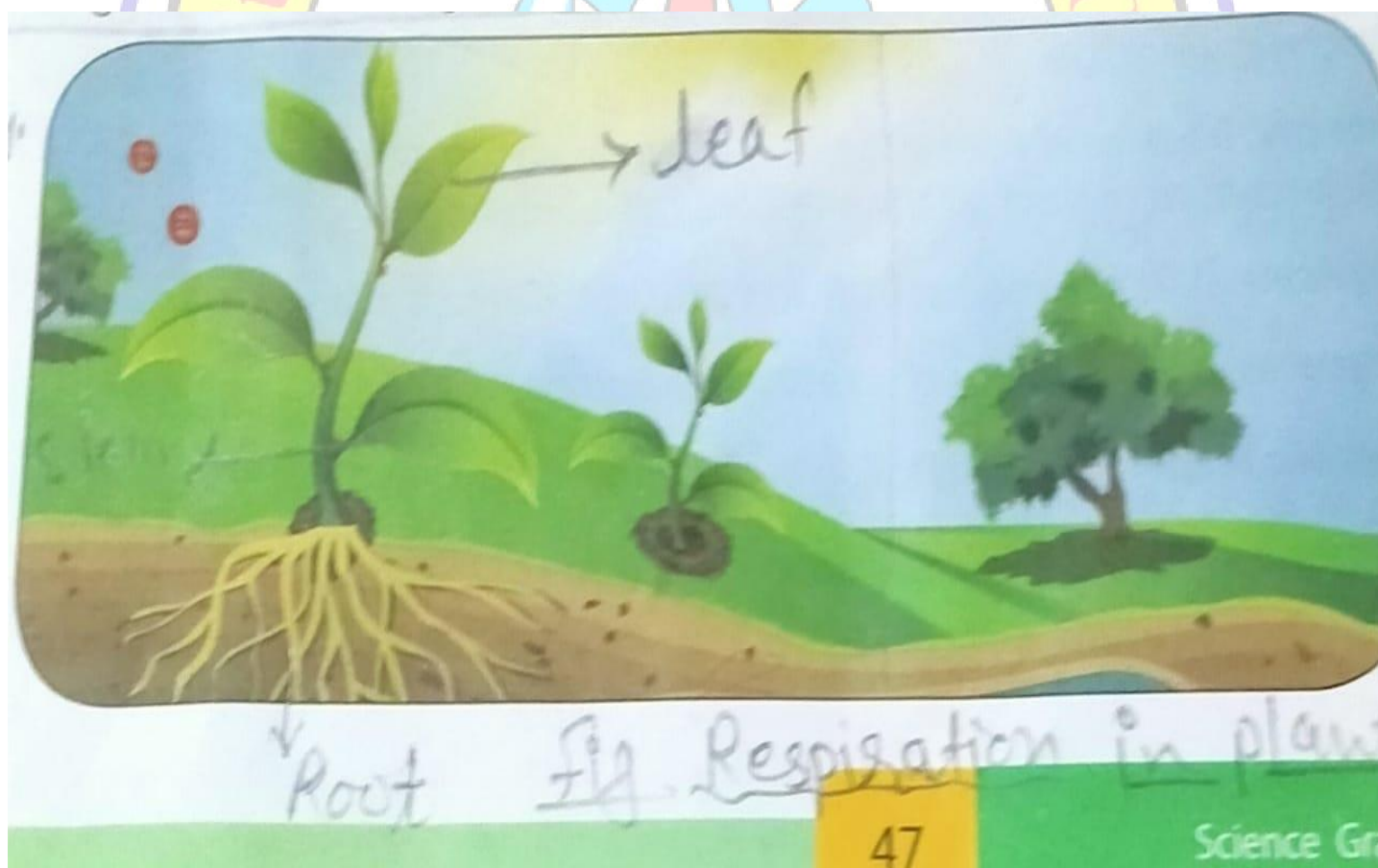


Fig. Respiration in plants

2. Ans. same as E(3).
3. The human respiratory system consists of a pair of nostrils, nasal cavity, pharynx, trachea, bronchi and the lungs.

- . Nose: The nostrils lead into nasal cavity, which opens into the upper part of the pharynx.
- .
- . Pharynx: The clean and warm air passes through pharynx to enter into windpipe or trachea.
- . Larynx: The nasal cavity continue into larynx or voice box or Adam's apple that connects the pharynx to the trachea.
- . The opening of larynx or glottis is guarded by a leaf like structure called epiglottis which prevents the food from entering into the windpipe.
- . Trachea : The trachea or windpipe is 11cm long tube connected to the larynx.
- . Bronchi : The trachea divided into two bronchi. Each bronchus enter into a lung.
- . The bronchi are further divided into many smaller tubes called bronchioles.
- . Lungs: The lungs are spongy structures where the exchange of gases takes place.
- . The Bronchioles divide into alveolar duct each of which terminates in an alveolus.
- . Surrounding the alveoli are capillaries. The oxygen from lungs diffuses into the capillaries through the alveoli. carbon dioxide is takes from the capillaries into the alveoli.

(4) The mechanism of respiration in different animals:

- . Insects : Insects such as cockroach breathing through opening in their body known as spiracles.
Air is taken in through these spiracles and enters into a network known as tracheal system.
- . Tadpole: Most of the aquatic organisms breathe through gills. Tadpoles (baby frog) breathe through gills which disappear when they become adults. The adult frog breathes through lungs when it is on land and moist skin when it is in water.
- . Birds: Birds can breathe through the mouth or the nostrils. Air entering these opening passes through the pharynx and then into the trachea.
- Reptile : They are turtles, snakes lizards etc. Unlike amphibians, reptiles breathe only through their lungs and have dry scaly skin that prevents them from drying out.
- . Fish : Gills are organs that allow fish to breathe underwater. Most fish exchange gases like, oxygen and carbon dioxide using gills that are protected under gill covers on both sides of the pharynx.

HOTS : (Ans.)

- (1) Because , surrounding the alveoli are capillaries. The oxygen from lungs diffuses into the capillaries through the alveoli.
- (2) If the epiglottis is not present above trachea then the regulation of food material to esophagus and air onto the lungs will be disturbed.
- (3) Due to their open circulatory system and the fact that they breathe through little holes in each of their body segment they are not dependent on the mouth or head to breathe.
- (4) The leaves can't be able to intake carbon dioxide, because of the block of stomata. And the processes like transpiration, respiration & photosynthesis will stop and the plant becomes die .

