पुना International School
Shree Swaminarayan Gurukul, Zundal

CLASS – VII
SCIENCE(SEM-2)
SAMPLE COPY
(Sept&Oct month)

SCIENCE

TEXTBOOK FOR CLASS VII

INDEX

Chapter – 10
Respiration in Organisms

Key words :

- Respiration is essential for survival of living organisms. It releases energy from the food.
- The oxygen we inhale is used to breakdown glucose into carbon dioxide and water. Energy is released in the process.
- The breakdown of glucose occurs in the cells of an organism **(cellular respiration).**
- During heavy exercise when the supply of oxygen to our muscle cells is insufficient, food breakdown is by anaerobic respiration (without oxygen)

Types of Respiration :

1. **External respiration** also known as breathing refers to a process of inhaling oxygen from the air into the lungs and expelling carbon dioxide from the lungs to the air. Exchange of gases both in and out of the blood occurs simultaneously.

2. **Internal Respiration:** Process in which food is broken down in body cells through various chemical reactions.

   Internal respiration are further classified into two parts:
   (a) **Aerobic Respiration:** Aerobic respiration takes place in the presence of oxygen. Carbon dioxide and water are the end products of aerobic respiration. Aerobic respiration happens in most of the organisms.

   (b) **Anaerobic Respiration**: Anaerobic respiration takes place in the absence of oxygen. Anaerobic respiration usually happens in most of the microbes. Alcohol and carbon dioxide are formed at the end of anaerobic respiration. In some cases, lactic acid is formed at the end of anaerobic respiration.

- **Respiration in Plants:** Leaves have pores called stomata for gaseous exchange by diffusion. Stems have openings called lenticels for gaseous exchange by diffusion. Roots have stomatal pores for gaseous exchange of oxygen dissolved in soil water.

- **Respiration in Animals:** Respiration in animals are vary according to their character like:
  Earthworm:through their skin
  Insect: through entire body surface
  Fish: respire through their gills
  Frogs: through its thin, moist and smooth skin when in water and by lungs when in land.

- **Respiration in Humans:** Inhaled air passes through nostrils into nasal cavity and then into lungs throughwindpipe.
- Breathing is a part of the process of respiration during which an organism takes in the oxygen-rich air and gives out air rich in carbon dioxide. The respiratory organs for the exchange of gases vary in different organisms.
- During inhalation, our lungs expand and then come back to the original state as the air moves out during exhalation.
- Increased physical activity enhances the rate of breathing.
- In animals like cow, buffalo, dog and cat the respiratory organs and the process of breathing are similar to those in humans.·

VERY SHORT ANSWER TYPE QUESTION

Ques 1 Name the respiratory organs in frogs.

Ans. Frogs respire through their moist skin as well as through a pair of lungs.

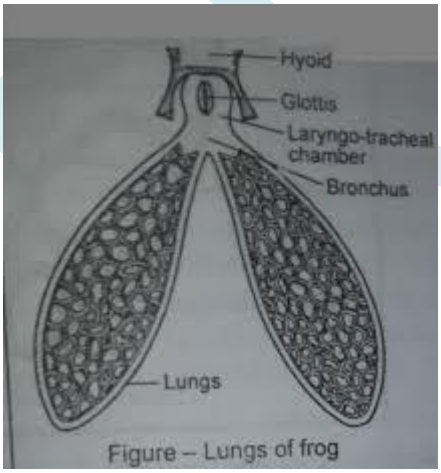


Figure – Lungs of frog

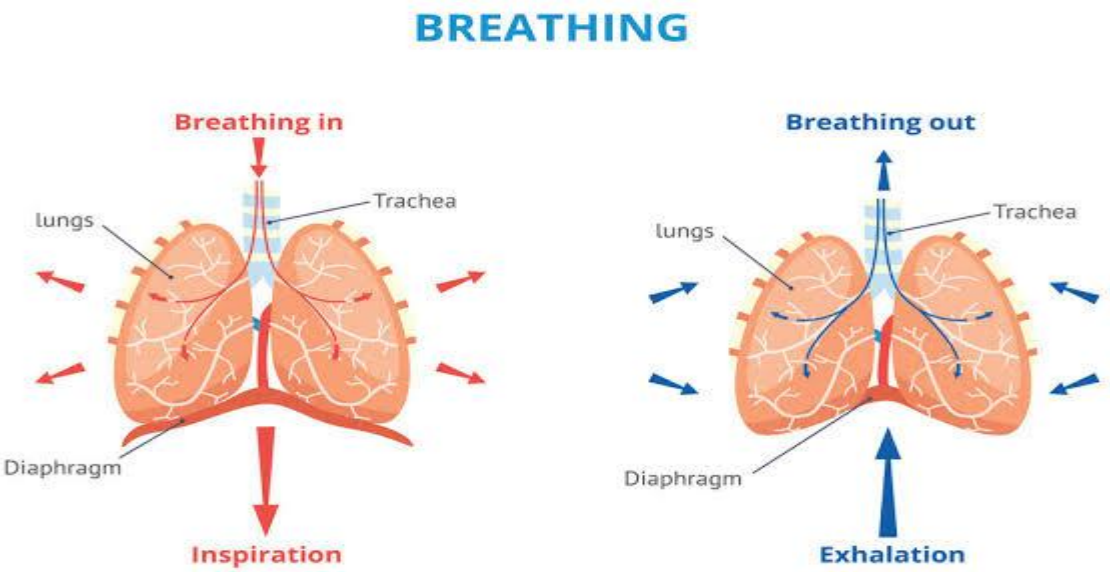
Ques **2. What are the end products of aerobic respiration.**

Ans. During aerobic respiration, carbon dioxide and water are released along with a large amount of energy.

Glucose + O2 ------- CO2 + Water + Energy

Ques 3. What changes are observed in diaphragm during inhalation ?

Ans. During the process of inhalation diaphragm contracts and move downwards.



Ques 4. The process of fermentation is based on which principle?

Ans. Anaerobic respiration.

SHORT ANSWER QUESTIONS

1. Pick the odd-one-out from each of the groups given below on the basis of respiratory organs. Give reason for your answer.

(a) cockroach, grasshopper, snail, ant

(b) lizard, cow, earthworm, snake

(c) crocodile, whale, dolphin, fish

(d) snake, tadpole, crow, goat

Ans: (a) Snail, as it does not breathe by means of trachea. Snails "breathe" through their skin and through an opening called the "pneumostome" visible on the right side of their bodies.

(b) Earthworm, because it breathes through its skin and it does not have lungs.

(c) Fish, as most fish breathe through their gills. Fish do not have lungs.

(d) Tadpole, as it breathes through gills. Tadpoles do not have lungs.

2. Which gas present in air is essential for aerobic respiration? What is the role of oxygen during respiration?

Ans: Oxygen present in air is responsible for aerobic respiration.

Role of oxygen during aerobic respiration: During aerobic respiration, oxygen helps in the oxidation of food and releases energy.

3. On an average, an adult human being at rest breathes 15–18 times per minute. The breathing rate, however, may differ under different conditions. Arrange the following activities given in the box in order of increasing breathing rates and give reason for your answer.

[sleeping, cycling, brisk walk, watching T.V.]

Ans: Activities in the order of increasing breathing rates will be as follows:-

Sleeping > Watching T.V. > Brisk walk > Cycling

The breathing rate would be the least while sleeping and would be the highest while cycling.

Whenever a person uses muscular force and engages in a physical activity, the breathing rate becomes faster. Whenever a human being is engaged in a strenuous work, the body cells require more energy. Hence, the breathing rate increases further to provide more oxygen to the cells .

4. On a very cold morning, Boojho and Paheli were talking with each other as they walked down to their school. They observed that the air coming out of their mouth looked like smoke. They were amused and wondered how it happened. Help them find the answer.

Ans: The warm and moist air exhaled by Boojho and Paheli came in contact with the cold air of the outside atmosphere and condensed into mist. That is why they observed the air coming out of their mouth as smoke.

5. Whenever we feel drowsy or sleepy, we start yawning. Does yawning help us in anyway?

Ans: During drowsiness, our breathing rate slows down. The lungs do not get enough oxygen from the air resulting in yawning. Yawning brings extra oxygen into the lungs and helps us to keep awake.

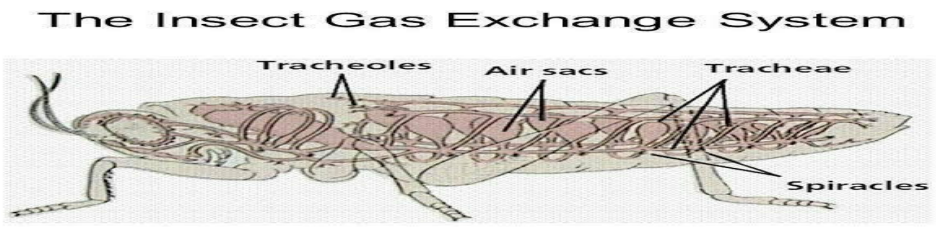
6. Insects and leaves of a plant have pores through which they exchange gases with the atmosphere. Can you write two points of differences between these pores with respect to their position, number and extension into the body?

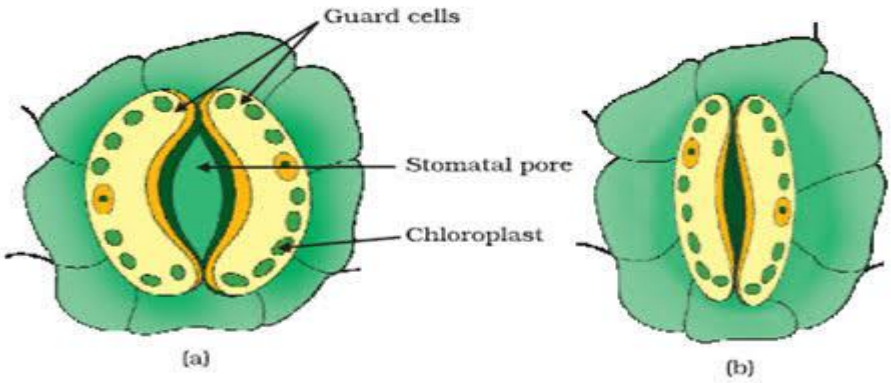
Ans: The differences between the pores of insects and leaves of a plant with respect to their position, number and extension into the body are as follows:-

(i) Spiracles are present on the sides of insects' body while stomata are present on the lower surface of the leaves.

(ii) Spiracles are fewer in number as compared to stomata.

(iii) Spiracles lead to an extensive network of tracheal system which is absent in the leaves.





LONG ANSWER QUESTIONS

1. Paheli participated in a 400m race competition held at her school and won the race. When she came home she had mixed feelings of joy and pain as she had cramps in her leg muscles. After a massage she was relieved of the pain. Answer the following questions related to the situation.

(a) What can be the possible reasons for the pain in her legs?

(b) Why did she feel comfortable after a massage?

Ans: (a) Paheli might not have focused on her breathing during the race. The possible reason for pain in her legs could be the accumulation of lactic acid in her muscles. During heavy exercise or running, the muscle cells respire anaerobically due to insufficient supply of oxygen and produce lactic acid.

(b) The massage improved the circulation of blood leading to increased supply of oxygen to the muscle cells. The increased oxygen supply helped in complete breakdown of lactic acid into CO_2 and water. Hence, she felt comfortable after the massage.

TEXTUAL EXERCISE

Question 1. Why does an athlete breathe faster and deeper than usual after finishing the race?
Answer: During running the athlete uses up lot of energy. So, she/he needs more oxygen and it can be obtained by speeding up oxidation of food.This requires more oxygen to be supplied.This is the reason behind fast and deep breathing of athlete after finishing the race.

Question 2. List the similarities and differences between aerobic and anaerobic respiration.
Answer: Similarities-
(i) Energy is released.
(ii) Carbon dioxide is produced.

Differences-
(i) Anaerobic nutrition takes place in absence of oxygen but aerobic respiration needs oxygen.
(ii) Glucose is completely broken down in aerobic respiration while in anaerobic respiration incomplete oxidation occurs.

Question 3. **Why do we often sneeze when we inhale a lot of dust-laden air?**
Answer: The air around us has various types of unwanted particles, such as smoke, dust, pollen etc. when we inhale; the particles get trapped in the hair present in our nasal cavity. Sometimes these particles enter the nasal cavity and create irritation that leads to sneezing.

Question 4. **Take three test-tubes. Fill 3/4th of each with water. Label them A,B, and C. Keep a snail in the test-tube A, a water plant in test tube B and in C keep snail and plant both. Which**

test-tube would have the highest concentration of CO_2?
Answer: Test-tube A will have the highest concentration of CO_2 because snail will take in oxygen and gives out CO_2. In test-tubes B and C, the CO_2 will be utilized by the water plant for Synthesizing food and hence there will be less concentration of CO_2 in these.

Question 5. Tick the correct answer:
(a) In cockroaches, air enters the body through
(i) lungs
(ii) gills
(iii) spiracles
(iv) skin

(b) During heavy exercise, we get cramps in the legs due to the accumulation of
(i) Carbon dioxide
(ii) lactic acid
(iii) Alcohol
(iv) water

(c) Normal range of breathing rate per minute in an average adult person at rest is:
(i) 9-12
(ii) 15-18
(iii) 21-24
(iv) 30-33

(d) During exhalation, the ribs
(i) move outwards
(ii) move downwards
(iii) move upwards
(iv) do not move at all.

Answer: (a) (iii) Spiracles
(b) (ii) Lactic acid
(c) (ii) 15-18
(d) (ii) move downwards

Question 6. Match the items in Column I with those in Column II

Column I	Column II
(a) Yeast	(i) Earthworm
(b) Diaphragm	(ii) Gills
(c) Skin	(iii) Alcohol
(d) Leaves	(iv) Chest cavity
(e) Fish	(v) Stomata
(f) Frog	(vi) Tracheae

Answer: (a) (iii) (b) (iv) (c) (i) (d) (v) (e) (ii) (f) (vi)

Question 7. Mark 'T' if the statement is true and 'F' if it is false:
(i) During heavy exercise the breathing rate of a person slows down.(T/F)
(ii) Plants carry out photosynthesis only during the day and respiration only at night. (T/F)
(iii) Frogs breathe through their skins as well as their lungs.(T/F)
(iv) The fishes have lungs for respiration.(T/F)
(v) The size of the chest cavity increases during inhalation.(T/F)
Answer: (i) F (ii) F (iii) T (iv) F (v)T.

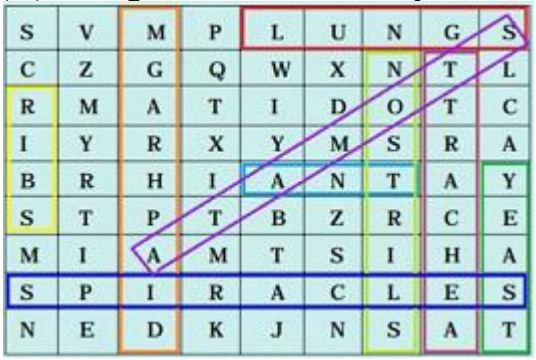
Question 8. Given below is a square of letters in which are hidden different words related transpiration in organisms. These words may be present in any direction-upwards, downwards, or along the diagonals. Find the words for your respiratory system.
Clues about these words are given below the square.

S	V	M	P	L	U	N	G	S
C	Z	G	Q	W	X	N	T	L
R	M	A	T	I	D	O	T	C
I	Y	R	X	Y	M	S	R	A
B	R	H	I	A	N	T	A	Y
S	T	P	T	B	Z	R	C	E
M	I	A	M	T	S	I	H	A
S	P	I	R	A	C	L	E	S
N	E	D	K	J	N	S	A	T

(i) The air tubes of insects.
(ii) Skeletal structure surrounding chest cavity.
(iii) Muscular floor of chest cavity.
(iv) Tiny pores on the surface of leaf.
(v) Small opening on the sides of the body of an insect.
(vi) The respiratory organ of human beings.
(vii) The opening through which we inhale.
(viii) An anaerobic organism.
(ix) An organism with tracheal system

Answer: (i) The air tubes of insects – Trachea
(ii) Skeletal structures surrounding chest cavity – Ribs
(iii) Muscular floor of chest cavity – Diaphragm
(iv) Tiny pores on the surface of leaf – Stomata
(v) Small openings on the sides of the body of an insect – Spiracles
(vi) The respiratory organs of human beings – Lungs
(vii) The openings through which we inhale – Nostrils
(viii) An anaerobic organism – Yeast

(ix) An organism with tracheal system – Ant



S	V	M	P	L	U	N	G	S
C	Z	G	Q	W	X	N	T	L
R	M	A	T	I	D	O	T	C
I	Y	R	X	Y	M	S	R	A
B	R	H	I	A	N	T	A	Y
S	T	P	T	B	Z	R	C	E
M	I	A	M	T	S	I	H	A
S	P	I	R	A	C	L	E	S
N	E	D	K	J	N	S	A	T

Question 9. **The mountaineers carry oxygen with them because----------.**
(a) At an altitude of more than 5 km there is no air.
(b) The amount of air available to a person is less than that available on the ground.
(c) The temperature of air is higher than that on the ground.
(d) The pressure of air is higher than that on the ground.

Answer: (b) The amount of air amiable to a person is less than that available on the ground.

Chapter – 11
Transportation in Animals and Plants

Key words:

Transportation in animals:

- In most of the animals the blood that circulates in the body distributes food and oxygen to different cells of the body. It also carries waste products from different parts of the body for excretion.
- Circulatory system consists of the heart and blood vessels.
- In humans, blood flows through arteries and veins and the heart acts as a pumping organ.
- Blood is the fluid which flows in blood vessels. It transport substance like digested food from the small intestine to the other parts of the body.
- Blood consists of plasma, RBC, WBC and platelets. Blood is red due to the presence of a red pigment, haemoglobin which binds with oxygen and transport oxygen to various parts.
- The human heart beats about 70 to 80 times per minute in an adult person. This is called heart rate.
- Arteries carry blood from the heart to all parts of the body.
- Veins carry blood from all parts of the body back to the heart.
- Removal of waste products from the body is called excretion.
- Excretory system of humans consists of two kidneys, two ureters, a urinary bladder, and urethra.
- Salts and urea are removed along with water as sweat.
- Fish excrete waste substances such as ammonia which directly dissolve in water.
- Birds, insects and lizard excrete uric acid in semi-solid form.

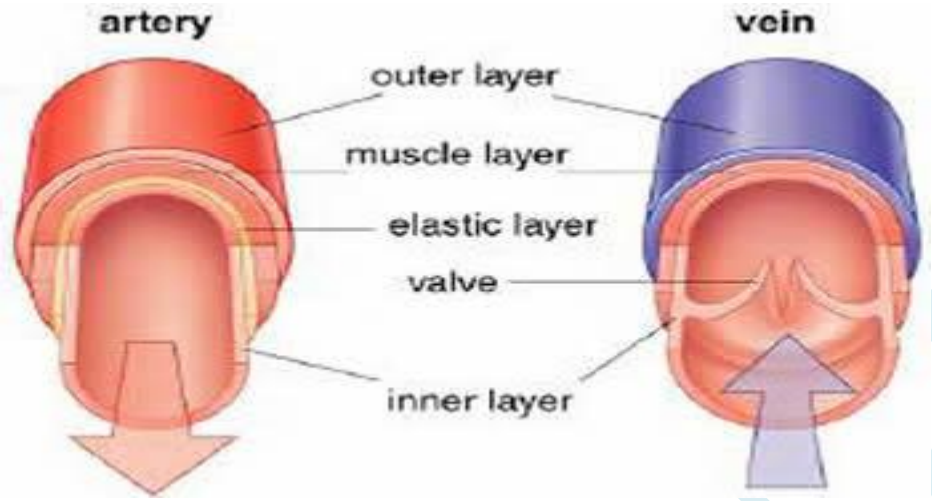
Transportation in plants :

- Water and mineral nutrients are absorbed by roots from the soil.
- Nutrients are transported along with water to the entire plant via the vascular tissue called xylem.
- The vascular tissue for the transport of food to the various parts of the plant is phloem.
- A lot of water is lost by plants in the form of vapour through stomata during transpiration.
- Transpiration generates a force which pulls up water absorbed by the roots from the soil, to reach the stem and leaves.

VERY SHORT ANSWER QUESTIONS

1. Veins have valves which allow blood to flow only in one direction. Arteries do not have valves. Yet the blood flows in one direction only. Can you explain why ?

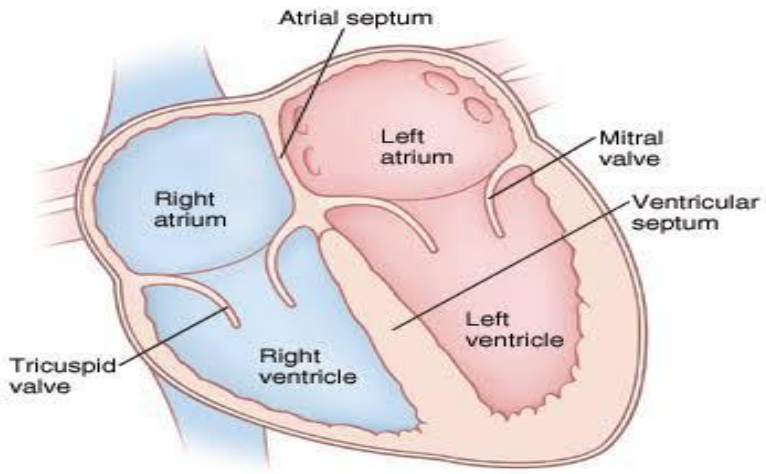
Ans: Arteries do not have valves, yet the blood flows in one direction only because blood flow in arteries is rapid and at a high pressure. Arteries also have narrow passage and thick elastic walls.



2. What is the special feature present in a human heart which does not allow mixing of blood when oxygen-rich and carbon dioxide-rich blood reach the heart ?

Ans: Heart is partitioned into four chambers :-

- Right and left auricles (or atria) and
- Right and left ventricle



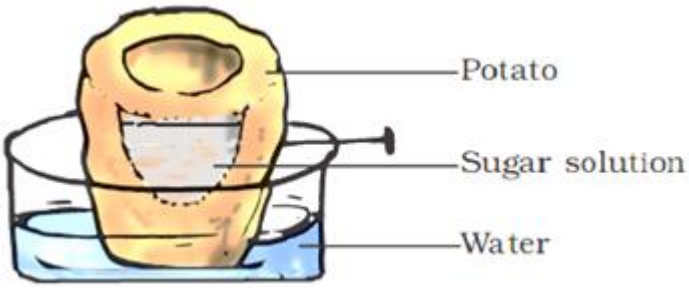
3. Name the organ which is located in the chest cavity with its lower tip slightly tilted towards the left.

Ans: Heart.

SHORT ANSWER QUESTIONS

1. Look at Figure 11.1. Draw another figure of the same set-up as would be observed after a few hours.

Ans:



2. Arrange the following statements in the correct order in which they occur during the formation and removal of urine in human beings.

(a) Ureters carry urine to the urinary bladder.

(b) Wastes dissolved in water is filtered out as urine in the kidneys.

(c) Urine stored in urinary bladder is passed out through the urinary opening at the end of the urethra.

(d) Blood containing useful and harmful substances reaches the kidneys for filtration.

(e) Useful substances are absorbed back into the blood.

Ans: (d) Blood containing useful and harmful substances reaches the kidneys for filtration.

(e) Useful substances are absorbed back into the blood.

(b) Wastes dissolved in water is filtered out as urine in the kidneys.

(a) Ureters carry urine to the urinary bladder.

(c) Urine stored in urinary bladder is passed out through the urinary opening at the end of the urethra.

3. Paheli uprooted a rose plant from the soil. Most of the root tips, with root hairs got left behind in the soil. She planted it in a pot with new soil and watered it regularly. Will the plant grow or die ? Give reason for your answer.

Ans: Possible answers are :

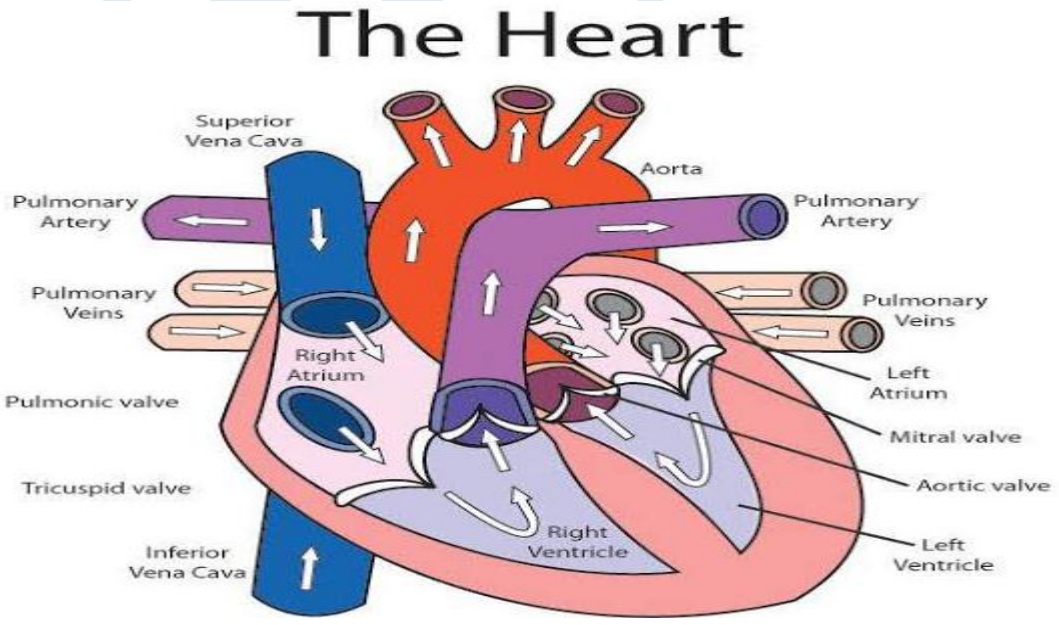
- The roots will not be able to absorb water and nutrients without the root hairs and the plant will die.
- The stem of the rose plant may grow new roots and the plant will live.
- The rose plant may not be able to survive in a different type of soil.

4. (a) Name the only artery that carries carbon dioxide-rich blood.

(b) Why is it called an artery if it does not carry oxygen-rich blood ?

Ans: (a) Pulmonary artery is the only artery that carries carbon dioxide-rich blood.

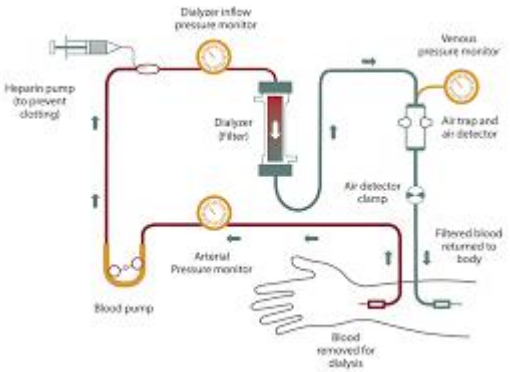
(b) It does not carry oxygen-rich blood but it is called an artery because arteries carry blood away from the heart and Pulmonary artery also carry blood away from the heart.



5. Boojho's uncle was hospitalised and put on dialysis after a severe infection in both of his kidneys.

(a) What is dialysis ?

(b) When does it become necessary to take such a treatment ?



Ans: (a) Dialysis is a method for removing toxic substances from the blood with the help of machine when kidneys are unable to do so. The dialysis machine is also called an artificial kidney.

(b) It become necessary to take such treatment when a person's kidneys stop working. An infection in the kidney, an injury to kidney or restricted flow of blood to the kidney can damage the kidneys due to which it may stop working.

6. Name the process and the organ which helps in removing the following wastes from the body.

(a) Carbondioxide

(b) Undigested food

(c) Urine

(d) Sweat

Ans: Process - Organ

(a) exhalation - lungs

(b) egestion - large intestines and anus

(c) excretion - kidneys

(d) perspiration - sweat glands

7. Observe Figure 11.2 and answer the given questions:

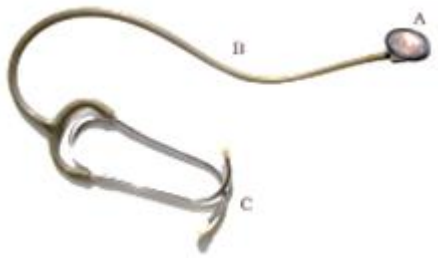


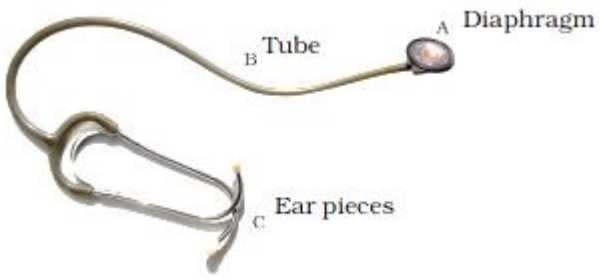
Fig 11.2

(a) Name the instrument.

(b) Label the parts A, B and C.

Ans: (a) The given instrument is stethoscope.

(b)



8. Paheli noticed water being pulled up by a motor-pump to an overhead tank of a five-storeyed building. She wondered how water moves up to great heights in the tall trees standing next to the building. Can you tell why ?

Ans: Constant diffusion of water along with the minerals from the root cells produces a pushing force upwards. At the same time, constant evaporation of water from the leaves produces a pulling force which causes the water to move upwards in xylem vessels.

TEXTUAL EXERCISE

Question 1. Match the structures given in Column I with functions given in Column II.

Column I	Column II
(i)Stomata	(a)Absorption of water
(ii) Xylem	(b) Transpiration
(iii) Root hairs	(c) Transport of food
(iv) Phloem	(d) Transport of water
	(e) Synthesis of carbohydrates.

Answer: (i) (b) (ii) (d) (iii) (a) (iv) (c)

Question 2.Fill in the blanks.

(i) The blood from the heart is transported to all parts of the body by the----------.
(ii) Hemoglobin is present in ---------- cells.
(iii) Arteries and Veins are joined by a network of ----------.
(iv)The rhythmic expansion and contraction of the heart is called ----------.
(v) The main excretory product in human beings is ----------.
(vi) Sweat contains water and ----------.
(vii) Kidneys eliminates the waste materials in the liquid form called ----------.
(viii) Water reaches great heights in the trees because of suction pull caused by ------.

Answer: (i) The blood from the heart is transported to all parts of the body by the **arteries**.
(ii) Hemoglobin is present in **red blood** cells.
(iii) Arteries and Veins are joined by a network of **capillaries**.
(iv) The rhythmic expansion and contraction of the heart is called **heart beat**.
(v) The main excretory product in human beings is **urea**.
(vi) Sweat contains water and **salts**.
(vii) Kidney eliminates the waste materials in the liquid form called **urine**.
(viii) Water reaches great heights in the trees because of suction pull caused by **transpiration**.

Question 3. Choose the correct options:

(a) In plants, water is transported through
(i) Xylem
(ii) Phloem
(ii) Stomata
(iv) Root hair

(b) Water absorption through roots can be increased by keeping the plants
(i) in the shade
(ii) in dim light.
(iii) under the fan
(iv) covered with a polythene bag.

Answer: (a) (i) Xylem (b) (iii) under the fan.

Question 4. Why is transport of materials necessary in a plant or in an animal? Explain.
Answer: In plants and animals the transport of materials is necessary. It can be explained as below:
(i) Animals need to transport food and water from intestine and oxygen from lungs to all other body parts.
(ii) Animals need to transport the wastes from where they are produced to parts from where they can be removed.
(iii) Plants need to transport the food from leaves, water and minerals to all other parts of the plant.

Question 5. What will happen if there are not platelets in the blood?
Answer: Blood cannot clot without the platelets help in the clotting of blood at the time of injury with bleeding.If there is no platelets, then there would be no clotting of blood and ultimately the person may die due to excess of flow of blood.

Question 6. What are stomata? Give two functions of stomata.
Answer: Small pores in leaves of plant are called stomata.

Functions of stomata-

(i) Exchange of carbon dioxide and oxygen.
(ii) Transpiration to remove excess of water.

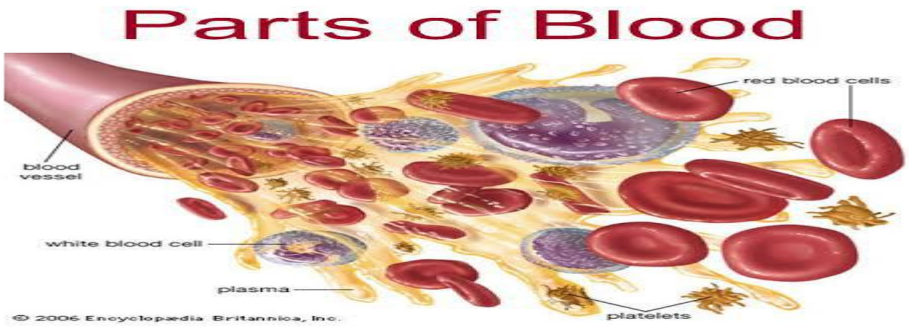
Question 7. Does transpiration serve any useful function in the plants? Explain.

Answer: (i) The excess water absorbed by the root system of the plants lost in the form of water vapour to their surroundings by the process of transpiration.
(ii) It also in transport of absorbed water to the leaves of plants from the roots for photosynthesis and helping the plants keeping erect.
(iii) It also produces cooling effect for the plants.

Question 8. What are the components of blood?

Answer: The main component of blood cells are:

Red blood cells (RBC), white blood cells (WBC), platelets and plasma.

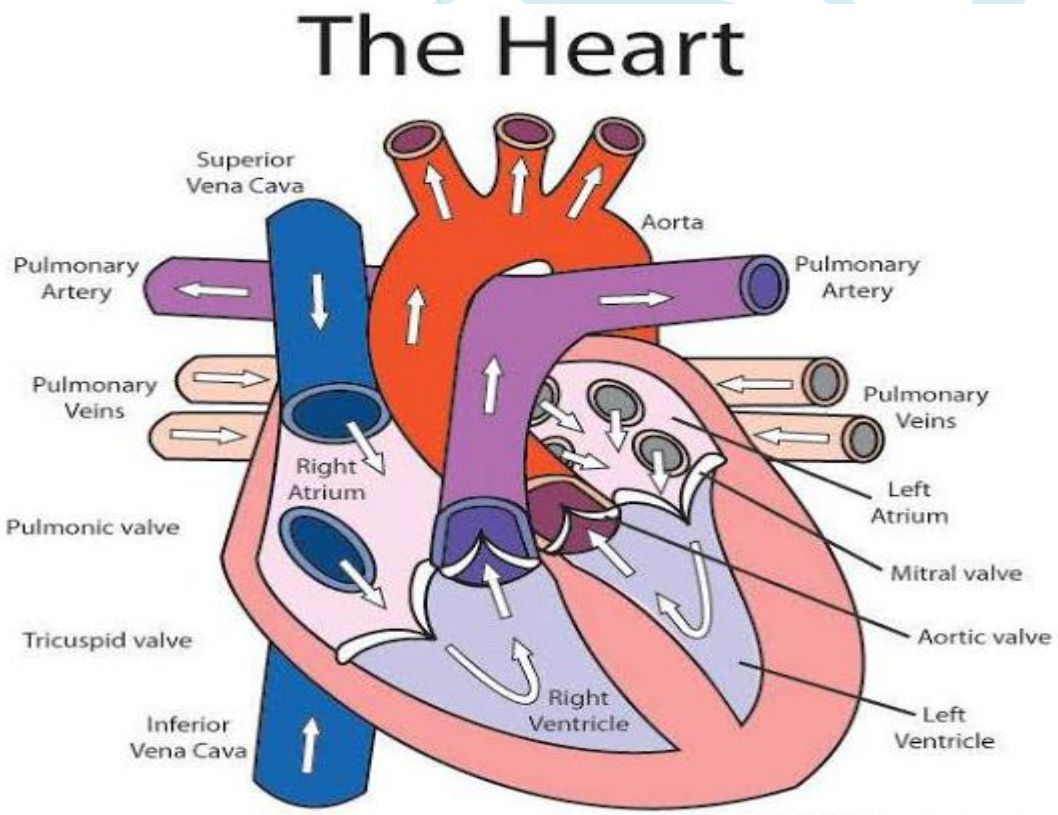


Question 9. Why blood needed by all the parts of a body?

Answer: Blood is needy by all the parts of a body because:
(i) It carries oxygen to all the parts of the body and also carries carbon dioxide back to the lungs.
(ii) It carries digested food to various parts of the body for absorption.
(iii) It contains platelets which help in the clotting of blood.
(iv) It helps in maintaining constant body temperature.
(v) It transports hormones and help in fighting the body with germs and bacteria.

Question 10. What makes the blood look red?
Answer: The presence of red pigment called haemoglobin.

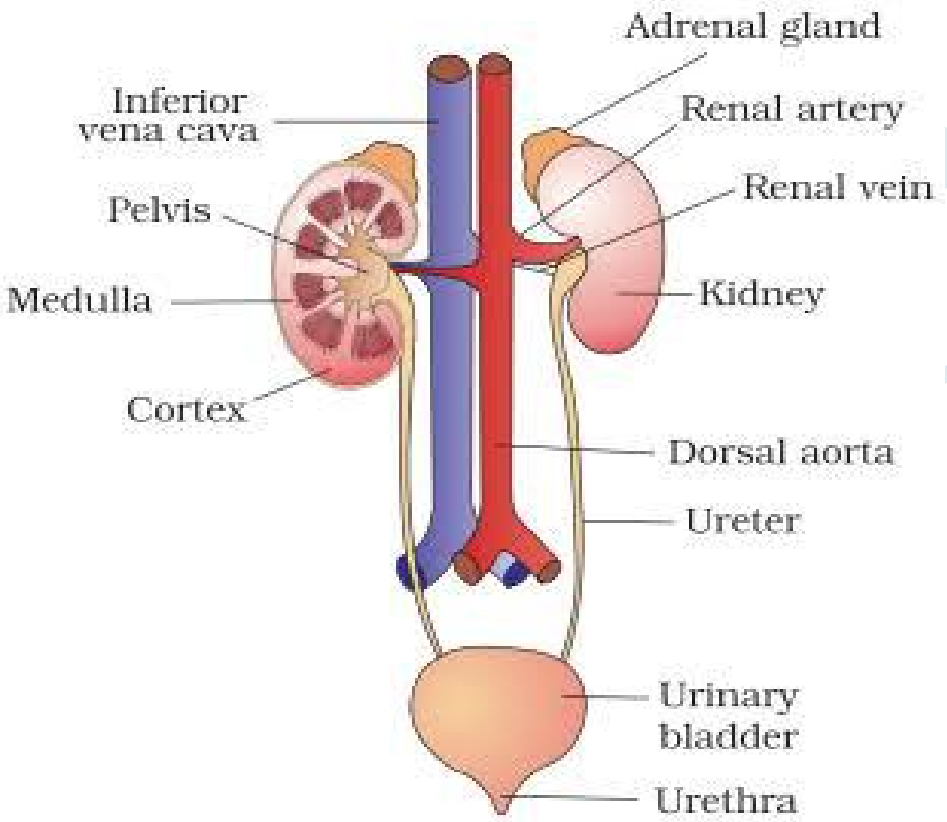
Question 11. Describe the functions of the heart.
Answer: Functions of the heart:
(i) It helps in the circulation of oxygen rich blood throughout the body by the pumping.
(ii)It receives oxygenated blood from the lungs.
(iii) It also pumps back the blood carrying carbon dioxide to the lungs.
(iv) It shows rhythmic contraction and relaxation for movement of blood.



Question 12. Why is it necessary to excrete waste products?
Answer: The waste products produced in various metabolic process in our body are harmful for the body. So it is necessary to excrete it.

Question 13. Draw a diagram of the human excretory system and label the various parts.

Answer:



Chapter – 12
Reproduction in Plants

Key words:

- All organisms multiply or reproduce offspring of their own kind.
- In plants there are two modes of reproduction, namely (a) Asexual and (b) Sexual.
- There are several methods of asexual reproduction such as fragmentation, budding, spore formation and vegetative propagation.
- Sexual reproduction involves the fusion of male and female gametes.
- In vegetative propagation new plants are produced from different vegetative parts such as leaves, stems and roots.
- Flower is the reproductive part of a plant.
- A flower may be unisexual with either the male or the female reproductive parts.
- A bisexual flower has both the male and the female reproductive parts.
- The male gametes are found inside the pollen grains and female gametes are found in the ovule.
- Pollination is the process of transfer of pollen grains from the anther of one flower to the stigma of the same or another flower.
- Pollination is of two types, self-pollination and cross-pollination. In self-pollination, pollen grains are transferred from the anther to the stigma of the same flower. In cross-pollination, pollen grains are transferred from the anther of one flower to the stigma of another flower of the same kind.
- Pollination takes place in plants with the help of wind, water and insects.
- The fusion of male and female gametes is called fertilization.
- Fertilized egg is called zygote. Zygote develops into an embryo.
- Fruit is the mature ovary whereas ovule develops into a seed, which contains the developing embryo.
- Seed dispersal is aided by wind, water and animals.
- Seed dispersal helps the plants to
  (i) prevent overcrowding,
  (ii) avoid competition for sunlight, water and minerals
  (iii) invade new habitats.

VERY SHORT ANSWER QUESTIONS

1. Fungus, moss and fern reproduce by a common method of asexual reproduction. Name the method.

Ans: They can reproduce asexually by means of spore formation.

2. Pick the odd one out from the following on the basis of mode of reproduction and give reason for it.

Sugarcane, Potato, Rice, Rose

Ans: Rice, because it does not reproduce by vegetative propagation whereas the other three plants reproduce by vegetative propagation.

3. Boojho had the following parts of a rose plant - a leaf, roots, a branch, a flower, a bud and pollen grains. Which of them can be used to grow a new rose plant ?

Ans: A Branch can be used to grew a new rose plant.

4. Which type of pollination does the Figure 12.1 indicate ?

Fig. 12.1

Ans: This figure shows self-pollination.

5. One morning as Paheli strolled in her garden she noticed many small plants which were not there a week ago. She wondered where they had come from as nobody had planted them there. Explain the reason for the growth of these plants.

Ans: The seeds from the tree may have fallen below and germinated into small plants.

SHORT ANSWER QUESTIONS

1. In the diagram given in Figure 12.2 label the parts marked (a), (b) and (c).

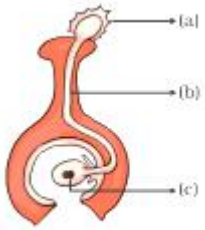
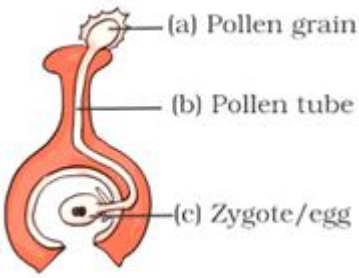


Fig. 12.2

Ans:



2. When you keep food items like bread and fruits outside for a long time especially during the rainy season, you will observe a cottony growth on them.

(a) What is this growth called?
(b) How does the growth take place?

Ans:(a) It is bread mould, a fungus.
(b) They develop from spores.

3. Group the seeds given in Figure 12.3 (i) to (iii) according to their means of dispersion.

(a) Seed dispersed by wind
(b) Seed dispersed by water
(c) Seed dispersed by animal

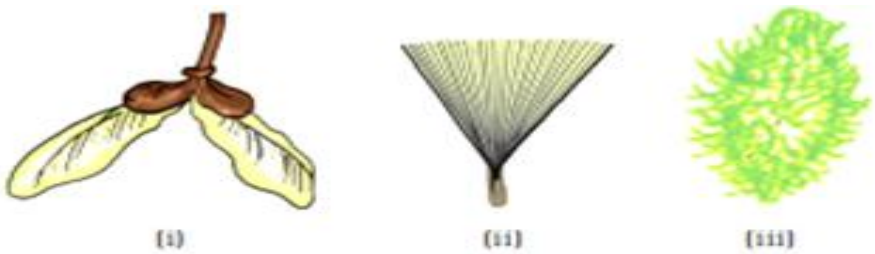


Fig. 12.3

Ans:(i) dispersed by wind
(ii) dispersed by wind.
(iii) dispersed by animal.

4. Coconut is a large and heavy fruit. How is it adapted for dispersal by water?

Ans: Coconut is a large and heavy fruit. Even that it is adapted for dispersal by water because coconut fruit develops a spongy fiber to help it to float in water. Coconut tree grows near sea shore. So, it floats in water and is carried away from one place to another by water currents.

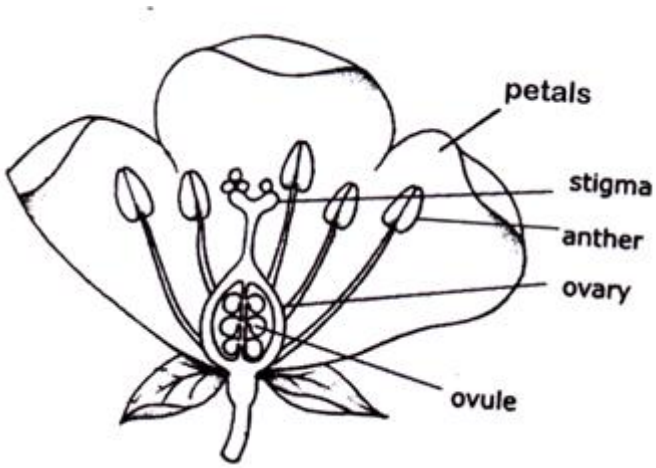
LONG ANSWER QUESTIONS

1. In the figure (12.4) of a flower , label the parts whose functions are given below and give their names.

Fig 12.4

(a) The part which contains pollen grains.
(b) The part where the female gamete is formed.
(c) The female reproductive part where pollen grains germinate.
(d) The colourful part of flower which attracts insects.

Ans:



2. Fill in the blanks with correct terms.

The male and female gametes fuse to form a (a) _____ during the process of (b) ___. This grows into an (c) ____ which is enclosed within a seed. After fertilization, the ovules develop into (d) _____ and the ovary develops into a (e)_____.

Ans:(a) zygote
(b) fertilization
(c) embryo
(d) seed
(e) fruit

3. In the diagram of a bisexual flower given as Figure 12.5, draw the missing part and label the parts marked (a), (b) and (c). Also label the missing part that you draw.

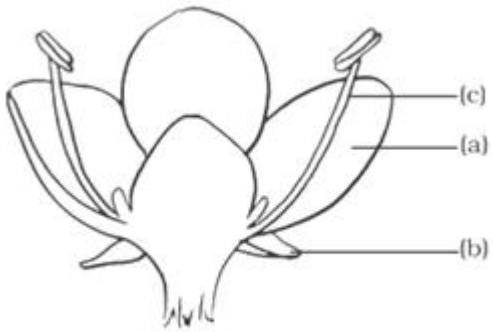
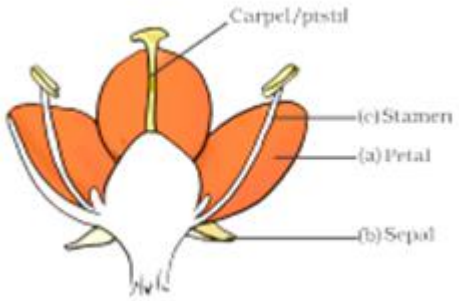


Fig. 12.5

Ans:



4. Write how the following seeds are dispersed.

(a) Seeds with wings.
(b) Small and light seeds.
(c) Seeds with spines/hooks.

Ans:(a) Seeds with wings are dispersed by wind. There winglike structures help them in flying with the wind. Two popular examples of winged fruits are*clematis* and*thistle*.

(b) Small and light seeds are dispersed by wind. Seeds of dandelion, maple, cotton, etc are dispersed by wind.

(c) Seeds with spines/hooks are dispersed by animal. These seeds stick to the fur of animals or clothes of human beings and are carried to distant places.

TEXTUAL EXERCISE

Question 1. Fill in the blanks:

(a) Production of new individuals from the vegetative part of parent is called -------.
(b) A flower may have either male or female reproductive parts. Such flower is called ---------.
(c) The transfer of pollen grains from the anther to stigma of the same or of another flower of the same kind is known as ----------.
(d) The fusion of male and female gametes is termed as ----------.
(e) Seed dispersal takes place by means of ---------- and ----------.

Answer: Fill in the blanks:

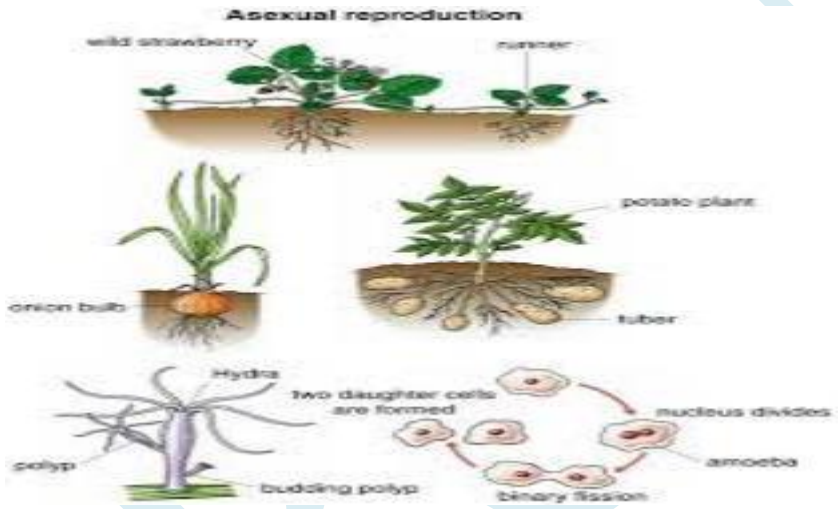
(a) Production of new individuals from the vegetative part of parent is called **vegetative propagation**.
(b) A flower may have either male or female reproductive parts. Such flower is called **unisexual flowers**.

(c) The transfer of pollen grains from the anther to stigma of the same or of another flower of the same kind is known as **pollination**.
(d) The fusion of male and female gametes is termed as **fertilisation**.
(e) Seed dispersal takes place by means of **wind, water** and **animals**.

Question 2. Describe the different methods of asexual reproduction. Give examples.

Answer: Various methods of asexual reproduction are:

a. Vegetative propagation- In this method new plants are developed from root, stem or leaf of plant.
b. Budding – Here, small bulb-like projection coming out from, yeast cell is called bud, gradually grows and gets detached from parent body to form new organism. Ex- hydra, yeast.
c. Fragmentation- In favorable condition, plant body breaks into two or more fragments which grow into independent plant.
d. Spore formation – The fungi on bread pieces grow from spores which are present in air. Spores germinate when come in contact of moisture.



Question 3. Explain what you understand by sexual reproduction.

Answer: The mode of reproduction in which male and female gamete fuse together to form a zygote. Zygote divides further to form new organism. Male and female gamete may be of same kind or different kind. Sexual reproduction is common in multicellular organism and unicellular organism in unfavorable condition.

Question 4.State the main difference between asexual and sexual reproduction.

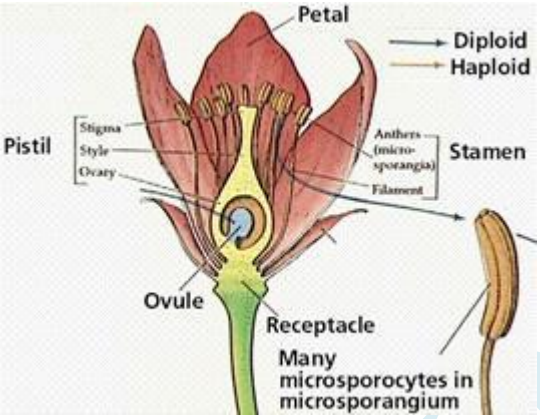
Answer:

Sexual Reproduction	Asexual Reproduction
New plants are obtained from seeds.	Plants can give rise to new plants without seeds.
Two parents are required to produce an individual.	The new individual comes from a single parent.

Takes place with the help of specialized sex cells.	No sex cells are required.
New individual has the characters of both the parents.	Characters of the new individual are same as that of the parent.

Question 5. Sketch the reproductive parts of flower.

Answer:



Question 6. Explain the difference between self-pollination and cross-pollination.

Answer:

Self - Pollination	Cross – Pollination
Pollen of a flower reaches to the stigma of same flower	The transfer of pollen grains from the anthers of a flower to the stigma of another flower on a different plant of the same species
No pollinating agent is required	Pollinating agent like wind, air or insects are required
Occurs only in bisexual flowers	Occurs in unisexual flower
It does not lead to genetic variation in the progeny	It leads to genetic variation in the progeny

Question 7. How does the process of fertilisation take place in flowers?

Answer: The male and female gametes fuse together to form zygote. The process of fusion of male and female gamete is called fertilization. The zygote undergo to mitotic division to form embryo.

Question 8. Describe the various ways by which seeds are dispersed.

Answer: Dispersal of seed takes place by various means such as wind, water, insects, animals and birds. The seeds dispersed by wind are light and smaller in size. So, that it may be carried by wind easily. The water dispersed seeds are generally floating in nature. Spiny seeds with hooks are generally carried by animal's body. The birds disperse the seed to faraway places by eating fruit, they excrete with digesting the seeds.

Question 9. Match items in Column I with those in Column II:

Column I	Column II
(a) Bud	(i) Maple
(b) Eyes	(ii) Spirogyra
(c) Fragmentation	(iii) Yeast
(d) Wings	(iv) Bread mould
(e) Spores	(v) Potato
	(vi) Rose

Answer: (a) (iii) (b) (v) (c) (ii) (d) (i) (e) (iv)

Question 10. Tick ( ) the correct answer:

(a) The reproductive part of a plant is the
(i) Leaf
(ii) Stem
(iii) Root
(iv) Flower

(b) The process of fusion of the male and female gametes is called
(i) Fertilisation
(ii) Pollination
(iii) Reproduction
(iv) Seed formation

(c) Mature ovary forms the
(i) Seed
(ii) Stamen
(iii) Pistil
(iv) Fruit

(d) A spore producing plant is
(i) Rose
(ii) Bread mould
(iii) Potato
(iv) Ginger

(e) Bryophyllum can reproduce by its
(i) Stem
(ii) Leaves
(iii) Roots
(iv) Flower

Answer: (a) (iv) flower.
(b) (i) fertilisation.
(c) (iv) fruit.
(d) (iii) bread mould.
(e) (ii) leaves.