SUBJECT – SCIENCE

CLASS – VII

CHAPTER – 10, RESPIRATION IN ORGANISMS

1. What is inhalation?

   The process of intake of air rich in oxygen is known as inhalation.
2. What is exhalation?

   The process of giving out air rich in carbondioxide is known as exhalation.
3. What is breathing?

   Breathing means taking in air rich in oxygen (inhalation) and giving out air rich incarbondioxide (exhalation).
4. What is cellular respiration?

   The process of breakdown of food in the cell with the release of energy is called cellular respiration.
5. What is breathing rate?

   The number of times a person breathes in a minute is termed as breathing rate.
6. What do you mean by the term “breath”?

   A breath means one inhalation plus one exhalation.
7. What do we breathe out?

   We breathe out carbondioxide and water vapour.
8. What is the normal breathing rate of an adult human being?

   The normal breathing rate of an adult human being is 15 – 18 times per minute.
9. Why smoking must be avoided?

   Smoking must be avoided because it damages lungs and also linked to cancer.
10. How does a frog breathe in water and on land?

    Frog breathes through skin when in water and through lungs when on land.
11. Define anaerobes.

    Organisms that can survive in the absence of air are called anaerobes. They get energy through anaerobic respiration. Example – yeast
12. Why are yeasts used to make wine and beer?

    Yeasts are single – celled organisms. They respire anaerobically and during this process yield alcohol. That is why yeasts are used to make wine and beer.
13. Why do we respire?

    Our body needs energy for its various activities. The food has stored energy which is released during respiration. So, all living organisms respire to get energy from food.

14. Why do muscles in legs develop cramps when we run fast?

    When we run fast, our muscle cells respire anaerobically due to temporary deficiency of oxygen. The partial breakdown of glucose produces lactic acid. The accumulation of lactic acid causes muscle cramps.

15. What are the two types of respiration? Which of the two type of respiration produces more energy?

    Two types of respiration are-

    a) Aerobic respiration - The process of respiration that takes place in the presence of oxygen is called aerobic respiration.

    b) Anaerobic respiration - The process of respiration that takes place in the absence of oxygen is called anaerobic respiration.

        - Aerobic respiration produces more energy as compared to anaerobic respiration.

16. Why do we get relief from cramps after a hot water bath or massage?

    Hot water bath or massage improves circulation of blood. As a result, the supply of oxygen to the muscle cells increases. The increase in the supply of oxygen results in the complete breakdown of lactic acid into carbondioxide and water.

17. Why do we take deep breath during heavy exercise?

    We take deep breath during heavy exercise so as to inhale more oxygen. As a result, more oxygen is supplied to our cells. It speeds up the breakdown of glucose and more energy is released.

18. Why should we cover our nose while sneezing?

    We should cover our nose while sneezing so that the foreign particles we expel out are not inhaled by other persons.

19. What is the percentage of oxygen and carbondioxide in inhaled and exhaled air?

    - Inhaled air contains 21% oxygen and 0.04% carbondioxide.
    - Exhaled air contains 16.4 % oxygen and 4.4% carbondioxide.

20. How do earthworms breathe?

    Earthworms breathe through their skin. The skin of the earthworm is moist and has large number of blood capillaries. So, gases can easily pass through their skin.

21. Why do we see whales and dolphins coming out of the water frequently?

    Whales and dolphins breathe through lungs. They take in air through blowholes present on the top of their head. That is why they have to come to the surface of water frequently to breathe in air.

22. What would happen if a potted plant is overwatered?

    If a potted plant is overwatered, its roots will not get enough oxygen to breathe as water fills up the air spaces between the soil particles. This will cause decaying of the plant and ultimately the plant dies.

23. How do fish respire?

    Fishes have a special respiratory organ called gills which help them to use oxygen dissolved in water. Gills are projections of the skin and are well supplied with blood vessels for exchange of gases.

24. What is the function of the hair present in nasal cavity?

    When we inhale air, the particles get trapped in the hair present in our nasal cavity. So, hair prevents the unwanted particles like dust, smoke and pollen grains from entering the respiratory system.

25. Why do we breathe heavily after holding it for some time?

    When we hold our breath, the gaseous exchange is not possible. Carbondioxide cannot be removed from our body and cells become oxygen starved. Hence, when we start breathing again, the body rapidly tries to make up for this deficiency of oxygen and to release carbondioxide, we breathe heavily.

26. Write an activity to show that exhaled air contains moisture.

    - Blow the exhaled air on clean plane mirror for a few minutes
    - Observe the surface of mirror after blowing the exhaled air.
    - You will see that a film of moisture appears on the surface of the mirror.
      This shows that exhaled air contains moisture.

27. How do cockroaches breathe?

    Cockroach breathes through air tubes or tracheae. These air tubes have openings called spiracles on the surface of the body. Oxygen rich air enters the tracheal tubes through spiracles and diffuses into every cell of the body. Similarly, carbondioxide from the cells goes into the tracheal tubes and moves out through spiracles.

28. How do plants respire?

    During respiration, plants take in oxygen and release carbondioxide. In the cells, oxygen is used to break down glucose into carbon dioxide and water. In plants, each part can independently take in oxygen from the air and give out carbondioxide. The leaves of the plants have tiny pores called stomata for exchange of oxygen and carbondioxide. Roots of the plants breathe with the help of root hair.

29. Differentiate between breathing and respiration.

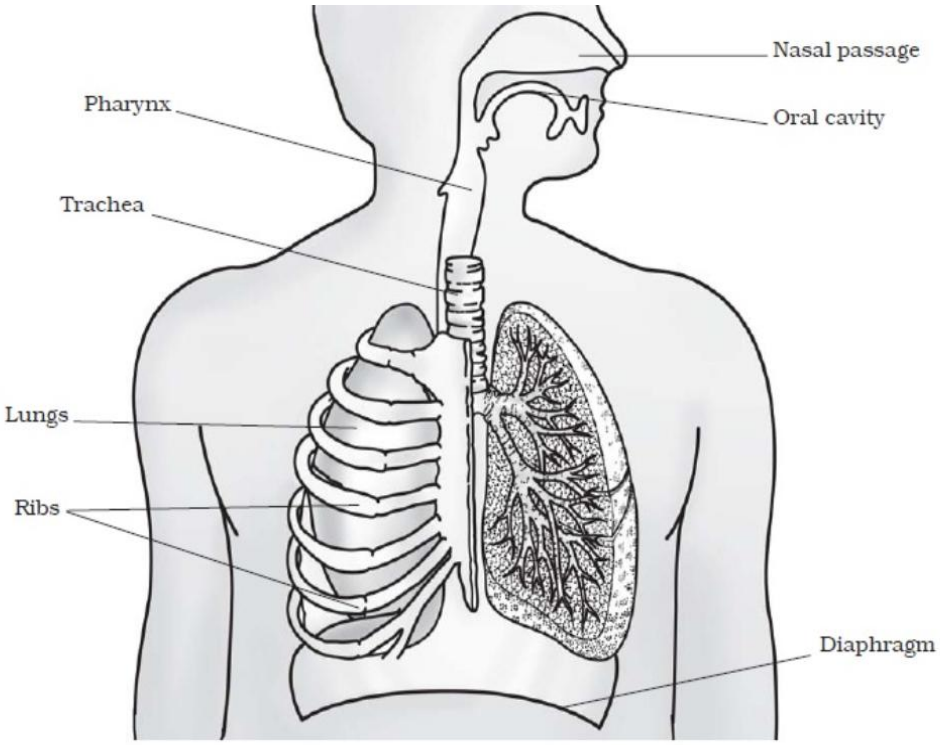
S.No.	Breathing	Respiration
1.	Breathing is a physical process.	Respiration is a biochemical process.
2.	It involves exchange of oxygen and carbondioxide.	It involves the complete breakdown of food to produce energy.
3.	No enzyme is involved in this process.	Enzymes are involved in this process.
4.	It takes place outside the cells.	It takes place inside the cells.
5.	No energy is released in this process.	Energy is released during this process.

30. Write an activity to show that exhaled air contains carbondioxide.

    - Take a glass bottle. Make a hole in its lid.
    - Pour some freshly prepared lime water in the bottle.
    - Insert a plastic straw through the hole in the lid in such a way that it dips in the lime water.

- Blow gently through the straw.
- You will see that the lime water turns milky. The milkiness is due to formation of calcium carbonate.
- This shows that exhaled air contains carbondioxide.

31. With the help of a labelled diagram, describe the respiratory system in humans.
    - Respiratorysystem in humans consists of nostrils, nasal cavity, trachea and lungs.
    - We take in air through our nostrils. When we inhale air, it passes through our nostrils into the nasal cavity.
    - From the nasal cavity, the air reaches our lungs through trachea (windpipe).
    - Lungs are present in the chest cavity which is surrounded by ribs on both the sides. Diaphragm forms the floor of the chest cavity.



32. Explain the process of breathing.

    Breathing involves two processes –

    a) Inhalation
    b) Exhalation

    Inhalation – The process of intake of air rich in oxygen is known as inhalation. During inhalation, ribs move up and outwards and diaphragm moves down. This movement increases the space in our chest cavity. As a result, air rushes into the lungs.

    Exhalation – The process of giving out air rich in carbondioxide is known as exhalation. During exhalation, ribs move down and inwards and diaphragm moves up to its former position. This reduces the size of the chest cavity. As a result, air is pushed out of the lungs.

SUBJECT – SCIENCE

CLASS – VII

CHAPTER 11, TRANSPORTATION IN ANIMALS AND PLANTS

1. What is pulse?

   Pulse is the throbbing movement. It is caused due to flow of blood under pressure due to pumping of heart.

2. Why do bleeding stops after sometime of the injury?

   Bleeding stops because of the presence of platelets in our blood. They help in blood clotting.

3. Why is pulmonary artery called an artery not a vein although it carries carbondioxide rich blood?

   Pulmonary artery is called an artery because it carries blood away from the heart.

4. Which artery carries carbondioxide rich blood from heart to lungs?

   Pulmonary artery carries carbondioxide rich blood from heart to lungs.

5. Which vein carries oxygen rich blood from lungs to heart?

   Pulmonary vein carries oxygen rich blood from lungs to heart.

6. How many times does your heart beat in a minute?

   Heart beats 70 – 72 times in a minute.

7. Who discovered the circulation of blood?

   William Harvey discovered the circulation of blood.

8. What is excretion?

   The process of removal of wastes produced in the cells of living organisms is called excretion.

9. How much amount of urine is passed by an adult human being in a day?

   An adult human being normally passes about 1 – 1.8 litre of urine in a day.

10. What does urine consist of?

    Urine consists of 95% water, 2.5% urea and 2.5% other waste products.

11. Define translocation.

    The transport of food from leaves to all other parts of plant is called translocation.

12. What is transpiration?

    Transpiration is the process of loss of water from leaves into the air in the form of vapour.

13. What is a tissue?

    A tissue is a group of cells that perform specialized function in an organism.

14. Define vascular tissue.

    Vascular tissue consists of pipe like vessels arranged end to end. It is of two types - xylem and phloem.

15. How is the food prepared by the leaves transported to the parts which cannot make food?

    The food prepared by the leaves is transported to the parts which cannot make food through the vascular tissue called phloem.

16. What maintains the circulation of blood and transport of substances to the different parts of the body?

    The rhythmic beating of the various chambers of the heart maintains circulation of blood and transport of substances to the different parts of the body.

17. What is circulatory system?

    The circulatory system is an organ system that helps to transport substances inside our body. This system consists of heart, blood and blood vessels.

18. What is heartbeat?

    The heart pumps blood due to rhythmic contraction and relaxation of the chambers. This rhythmic contraction and relaxation of the heart is known as heartbeat.

19. What is a stethoscope?

    Stethoscope is an instrument used to listen to our heartbeat. It is used to amplify the sound of the heart.It consists of a chest piece that carries a sensitive diaphragm, two ear pieces and a tube joining the parts.

20. What is excretory system?

    The excretory system is an organ system that helps in getting rid of wastes formed inside our body. The excretory system consists of a pair of kidneys, a pair of tubes called ureters, a urinary bladder and a urethra.

21. Define blood vessels.

    Blood vessels are thin tubes that run through the entire body to transport blood. Arteries, veins and capillaries are the three types of blood vessels.

22. What is pulse rate? What is the pulse rate per minute in man?

    The number of heart beat per minute is called the pulse rate. A resting person usually has a pulse rate between 72 to 80 beats per minute.

23. Why are valves present in veins?

    Valves are present in veins to prevent the back flow of blood.

24. Why do arteries have thick elastic walls?

    Arteries carry oxygen rich blood from the heart to all parts of the body. Since the blood flow is rapid and at a high pressure, the arteries have thick elastic walls.

25. What is dialysis?

    Dialysis is an artificial process of removing waste products from the blood. It is done when both the kidneys fail to function properly.

26. Why do we see white patches on our clothes in summer?

    In summer, our body releases water and salt in the form of sweat. White patches are the marks left by salt present in the sweat.

27. What is the function of sweat?

    - Sweat contains water and salts. As the water in the sweat evaporates, it helps to keep our body cool.
    - Sweat helps in controlling body temperature.

28. What are capillaries?

    On reaching the tissues, arteries divide into extremely thin tubes called capillaries. The capillaries join up to form veins which empty into the heart.

29. What is the function of circulatory system?

    Circulatory system helps in

    - Transportation of nutrients to different parts of the body
    - Circulation of oxygen inhaled for oxidation of food
    - Transportation of waste products to parts from where they can be removed

30. How transport of substances takes place in sponges and hydra?

    Animals such as sponges and hydra do not have any circulatory system. The water in which they live brings food and oxygen as it enters their bodies. The water carries away waste materials and carbondioxide as it moves out. Thus, these animals do not need a circulatory fluid like the blood.

31. What is the function of root hair?

    Plants absorb water and minerals by the roots. The roots have root hair. The root hair increase the surface area of the root for absorption of water and minerals dissolved in water. The root hair is in contact with the water present between the soil particles.

32. How water and minerals absorbed by the roots are transported to the leaves?

    Water and minerals absorbed by the roots are transported to the leaves through the vascular tissue called xylem. The xylem forms a continuous network of channel that connects roots to the leaves through the stem and branches and thus transports water to the entire plant.

33. Write a short note on different mechanisms by which different forms of wastes are eliminated from the human body.

    a) Excretion – it is the process of removing toxic nitrogenous waste from the body.
    b) Egestion – it is the process of removing solid undigested food products.
    c) Exhalation – it is a process in which carbondioxide is removed through the lungs.
    d) Sweating – it helps to remove water and some salts in the form of sweat through the skin of the body.

34. Write a short note on excretory products produced in different animals.

    The way in which waste chemicals are removed from the body of the animals depends on the availability of water.

    - Aquatic animals excrete waste in gaseous form (ammonia) which directly dissolves in water. Example - fish
    - Some land animals excrete a semi – solid white coloured compound called uric acid. Example – bird, lizard, snake.
    - Some animals excrete urea. Example – human being

35. Explain the process of excretion in human being.

    The excretory system consists of a pair of kidneys, a pair of tubes called ureters, a urinary bladder and a urethra.

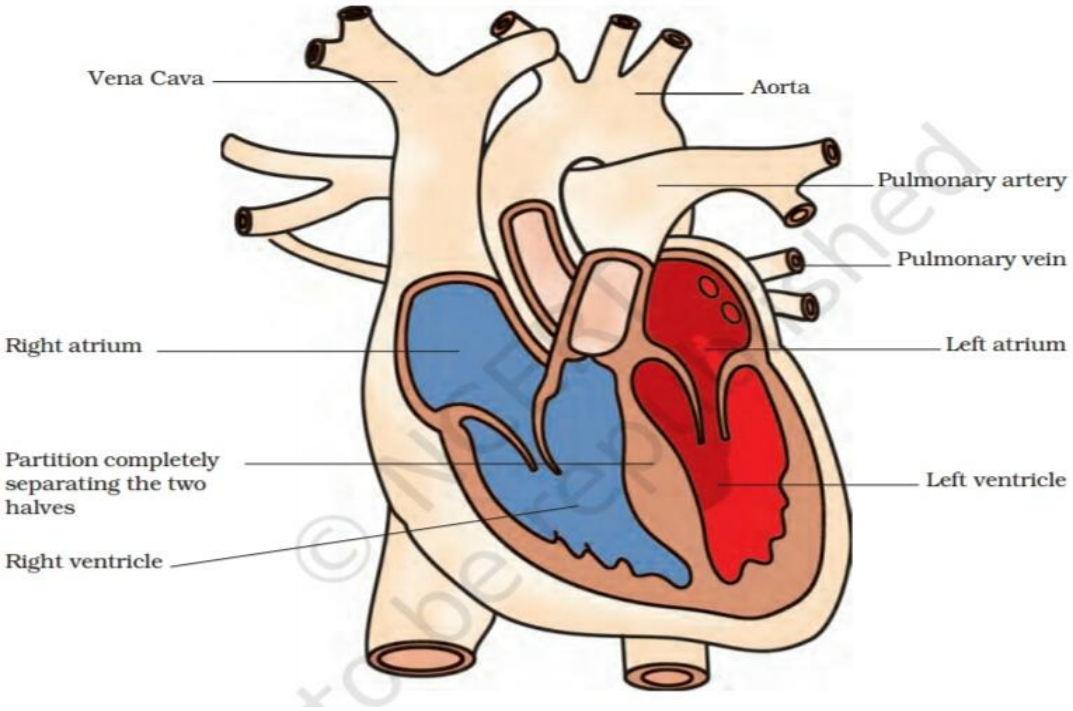
    When the blood reaches the kidneys, it contains both useful and harmful substances. The useful substances are absorbed back into the blood. The wastes dissolved in water are removed as urine.

From the kidneys, the urine goes into the urinary bladder through tube like ureter. Urine is stored in the bladder and is passed out through urethra.

36. Differentiate between arteries and veins.

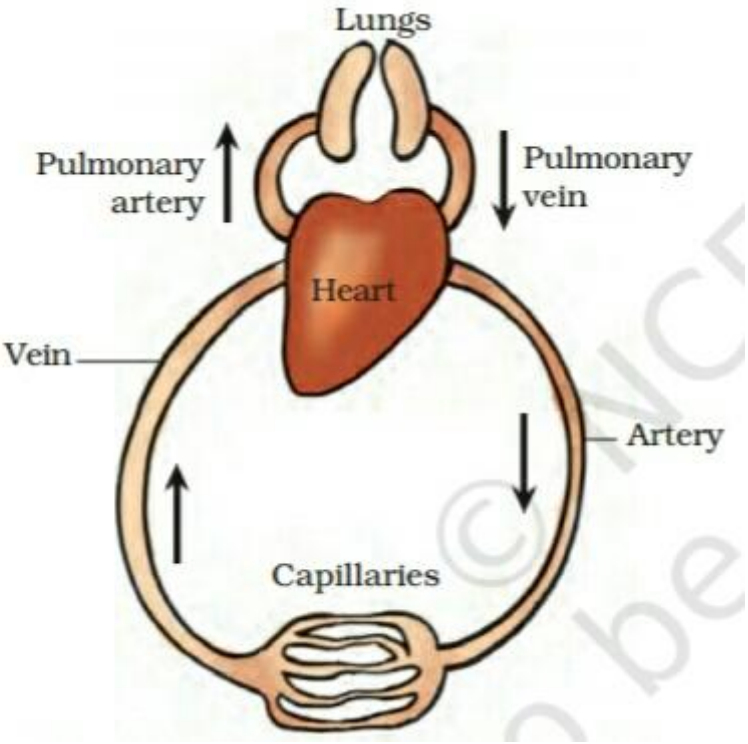
S.NO.	ARTERIES	VEINS
1.	Arteries have thick walls.	Veins have thin walls.
2	In arteries, blood flows from heart to all the parts of the body.	In veins, blood flows from all the parts of the body to heart.
3.	Arteries carry oxygen rich blood	Veins carry carbondioxide rich blood
4.	Valves are absent.	Valves are present.

37. Explain structure of heart of human being with a diagram.
    - Human heart is located in the chest cavity with its lower tip slightly tilted towards the left.
    - Human heart beats to act as a pump for the transport of blood.
    - The heart has four chambers. The upper two chambers are called atria and the lower two chambers are called ventricles.
    - The partition between the chambers helps to avoid mixing up of blood rich in oxygen with blood rich in carbondioxide.



38. Explain circulation of blood in human with a diagram.
    - The right side of the heart contains carbondioxide rich blood which is received from all parts of the body. The carbondioxide blood is then pumped to the lungs.
    - In the lungs, the blood get rid of carbondioxide and takes in oxygen from the air inhaled into the lungs.

- Then left side of the heart receives oxygen rich blood from the lungs.
- From the left side of the heart, the pure blood is then sent to all parts of the body.



39. How water reaches to xylem vessels of the root from the soil? Explain with an activity.
    - Take a potato and peel off its outer skin.
    - Cut one of its ends to make the base flat.
    - Make a deep and hollow cavity on the opposite side.
    - Fill half of the cavity with sugar solution and mark the level by pin.
    - Put the potato into a dish containing small amount of water.
    - Allow the apparatus to stand for few hours.
    - You will observe that the level of sugar solution in the potato increases

    For very short distances, water can move from one cell to another. In the same way, water reaches to xylem vessels of the root from the soil.

SUBJECT – SCIENCE

CLASS – VII

CHAPTER 12, REPRODUCTION IN PLANTS

1. What is reproduction?

   The production of new individuals from their parents is known as reproduction.
2. What is the function of flowers in plants?

   The flowers perform the function of reproduction in plants.
3. What is a node?

   A node is a part of the stem or branch at which a leaf arises.
4. What are vegetative buds?

   Apart from flower buds, there are buds in the axil of leaves which develop into shoots. These buds are called vegetative buds.
5. What does a bud consist of?

   A bud consists of a short stem around which immature overlapping leaves are folded.
6. Name the method by which potato reproduce.

   Potato reproduces by the method of vegetative propagation.
7. Give two examples of plants that grow through roots.

   Sweet potato and dahlia grow through roots.
8. What is the result of sexual reproduction?

   Plants produce seeds as a result of sexual reproduction.
9. What is the other name of female gamete?

   A female gamete is also known as an egg.
10. How does the male gamete present in pollen grain reaches the female gamete present in the ovule?

    The male gamete reaches to the female gamete by pollination
11. What prevents pollen grains from drying up?

    Pollen grains have a tough protective coat which prevents them from drying up.
12. What is a zygote?

    The cell which results after fusion of a male and a female gamete is called a zygote.
13. What develops into an embryo?

    Zygote develops into an embryo.
14. What does a seed contain?

    A seed contains an embryo.
15. What is the function of seed coat?

    Seed coat protects the embryo.
16. Which part of flower develops into fruit?

    The fruit is the ripened ovary.

17. What events occur after fertilisation?

    After fertilisation, the ovary grows into a fruit and generally other parts of the flower fall off.

18. In nature same kind of plants grows at different place. How does this happen?

    This happens because their seeds are dispersed to different places.

19. How does bryophyllum plant reproduce?

    Bryophyllum reproduces through the method of vegetative propagation. It has buds in the margins of leaves. If a leaf of this plant falls on moist soil, each bud can give rise to a new plant.

20. How do cacti reproduce?

    Cacti reproduce new plants when their parts get detached from the main plant body. Each detached part can grow into a new plant.

21. How do algae reproduce?

    Algae reproduce by fragmentation. When water and nutrients are available, algae grow and multiply rapidly by fragmentation. An alga breaks up into two or more fragments. These fragments or pieces grow into new individuals.

22. Name the reproductive parts of a flower.

    - The male reproductive part in a flower is called stamen.
    - The female reproductive part in a flower is called pistil.

23. What are the different parts of a pistil?

    A pistil consists of stigma, style and ovary. The ovary contains one or more ovules. The female gamete is formed in an ovule.

24. Why are flowers generally so colourful and fragrant?

    Flowers are generally so colourful and fragrant so as to attract insects for pollination. Insects visit flowers and carry away pollen on their bodies and in this way insects help in pollination.

25. What will happen if all the seeds of a plant grow at the same place?

    If all the seeds of a plant fall at the same place and grow there then there would be severe competition between them for sunlight, water, minerals and space. As a result, the seeds would not grow into healthy plants.

26. Why is reproduction essential for organisms?

    Reproduction multiplies the number of individuals of a population. It ensures the continuity of life generation after generation.

27. How do fungi reproduce?

    Fungi reproduce by the method of spore formation.

28. Why is pollination essential?

    Pollination is essential because it involves the transfer of pollen grains from the anthers to the pistil. This is the first step in the process of seed formation.

29. Define unisexual and bisexual flowers.

    Unisexual flowers – the flowers which contain either only the pistil or only the stamens are called unisexual flowers. Example – corn, papaya and cucumber have unisexual flowers.

    Bisexual flowers –the flowers which contain both stamens and pistil are called bisexual flowers. Example – mustard, rose and petunia have bisexual flowers.

30. What are the two types of reproduction? Explain them.

    Two types of reproduction are –

    a) Asexual reproduction

    b) Sexual reproduction

a) Asexual reproduction – in asexual reproduction, plants give rise to new plants without seeds or spores

b) Sexual reproduction – in sexual reproduction, new plants are obtained from seeds.

31. What is vegetative propagation?

- Vegetative propagation is a type of asexual reproduction in which new plants are produced from roots, stems, leaves and buds.In this process, reproduction is through vegetative parts of the plant, so it is known as vegetative propagation.
- In vegetative propagation, the new plants formed are exact copies of the parent plant because they are produced from a single parent.

32. What are the advantages of vegetative propagation?

    a) Plants produced by vegetative propagation takes less time to grow and bear flowers and fruits earlier than those produced from seeds.

    b) The new plants are exact copies of the parent plant.

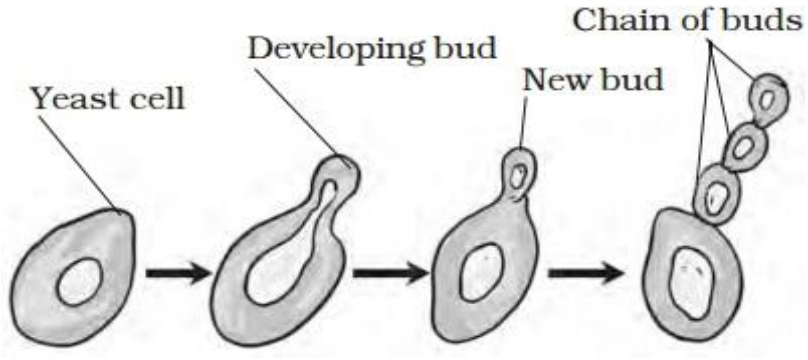
    c) Plants like banana, rose which do not produce seeds can only be grown vegetatively.

33. What are spores? How can they survive for long time?

    The spores are asexual reproductive bodies. A spore can survive for long time because it is covered by a hard protective coat to withstand unfavourable conditions such as high temperature and low humidity.

34. How does yeast multiply?

    Yeasts reproduce by the process of budding. The small bulb like projection comes out from the yeast cell. This projection is called a bud. The bud gradually grows and get detached from the parent cell and forms a new yeast cell. The new yeast cell grows, matures and produces more yeast cells.



35. What are the different parts of a stamen?

    There are two parts of a stamen –

    a) Anther

    b) Filament

a) Anther - Anther contains pollen grains which produce male gametes.
b) Filament - Filament is a stalk like structure that attaches to the base of the flower and supports the anther.

36. What is pollination? Describe its types.

The transfer of pollen grains from the anther to the stigma of a flower is called pollination. Two types of pollination are –

a) Self-pollination – if the pollen land on the stigma of the same flower, it is called self-pollination.
b) Cross- pollination – when the pollen of a flower lands on the stigma of another flower of the same plant or that of a different plant of the same kind, it is called cross – pollination.

37. What is seed dispersal? What are the advantages of seed dispersal?

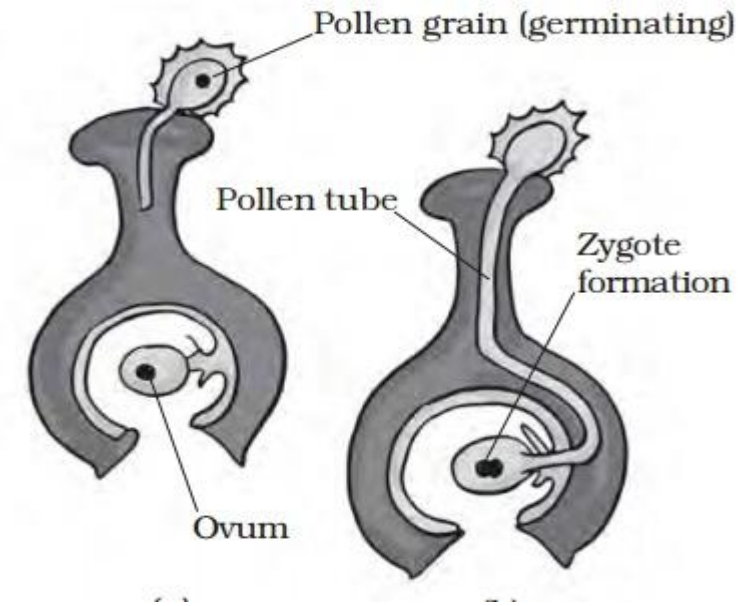
The process by which seeds are scattered away from the mother plant is called seed dispersal.

Advantages –

a) Dispersal of seeds prevents competition between the plant and its own seedlings for sunlight, water and minerals.
b) It enables the plants to invade new habitats for wider distribution.

38. What is fertilistaion? Draw diagram.

The process of fusion of male and female gamete to form a zygote is called fertilisation.



39. Name and explain different methods of asexual reproduction.

a) Budding – a process of asexual reproduction with the help of formation of buds is called budding. Example – hydra
b) Vegetative propagation – it is a type of asexual reproduction in which new plants are produced from roots, stems, leaves and buds. Example – rose grows by vegetative propagation.
c) Fragmentation – some organisms reproduces by breaking their body into two or more fragments. These fragments or pieces grow into new individuals. This type of asexual reproduction is called fragmentation. Example – algae reproduces by fragmentation.

d) Spore formation –the spores are asexual reproductive bodies. Under favourable conditions, a spore germinates and develops into a new individual. Plants such as moss and ferns reproduce by means of spores.

40. Explain various methods of dispersal of seeds.
    a) Dispersal by wind – seeds of certain plants are light and have wing like structures or hair on them. These seeds are easily carried away by the wind from one place to another. Example – maple and dandelion seeds.
    b) Dispersal by water – seeds of plants such as lotus and coconut are spongy or have a fibrous covering, which helps them to float on water. Water carries these seeds from one place to another.
    c) Dispersal by animals – some seeds have spines or hooks. These seeds stick to the bodies of animals and are thus carried away from the mother plant. Example – xanthium and urena
    d) Dispersal by explosion – some seeds are dispersed when the fruits burst with sudden jerks. The seeds are scattered far from the mother plant. Example – castor and balsam