ICSE Board
Class VI Biology
Sample Paper – 2 Solution

Question 1

1. (d) Robert Hooke. (Robert Hooke coined the term 'cell' in 1665 after examining a thin section of cork under a microscope.)

2. (b) Oesophagus. (Oesophagus or the food pipe is a tube which connects the pharynx to the stomach.)

3. (a) Leaves. (Leaves bear numerous pores called stomata through which excess amount of water is removed from the plant's body in the form of water vapour. This process is called transpiration.)

4. (b) Looking at the Sun directly. (The Sun is the source of heat and energy. The solar rays reaching the Earth's surface are strong and if seen directly may harm the eyes.)

5. (d) Alveoli. (Exchange of gases such as oxygen and carbon dioxide takes place at the thin and moist walls of the alveoli.)

6. (c) Duodenum. (Duodenum is the initial U-shaped part of the small intestine about 25 cm long and 5 cm in diameter.)

7. (a) Tonoplast. (Vacuoles are clear cavities filled with water and other substances and covered with a cytoplasmic membrane called tonoplast.)

8. (a) Sepals. (Sepals are the outermost structures of a rose flower.)

9. (a) Carbohydrates. (Carbohydrates and fats are energy producing foods. They are broken down when the body requires energy.)

10. (d) Petiole. (Petiole is a narrow, stalk-like structure connecting the leaf to the stem.)

11. (c) Cone. (Trees growing on the mountains are cone shaped and have sloping branches so that the snow slides off easily.)

12. (b) Changing directions. (Flat fins and tail in fish helps it to change its direction while moving in water.)

13. (b) Petals. (Corolla is the second whorl of the flower made of coloured units called petals.)

14. (c) Golgi apparatus. (Dictyosomes are layers of flattened sacs found in the golgi apparatus of plant cells.)

15. (b) Oxygen. (During photosynthesis, plants utilise CO_2. The oxygen produced is used for respiration and the excess amount of oxygen is given out through the stomata.)
Please note that the information provided in brackets is to help you in your learning. It does not have to be included in your answer.

Question 2

A.

1. Lysosome
2. Plaque
3. Venation
4. Enamel
5. Stomata

B.

1. Maltase
2. Webbed
3. Fruit
4. Centrioles
5. Cardiac cycle

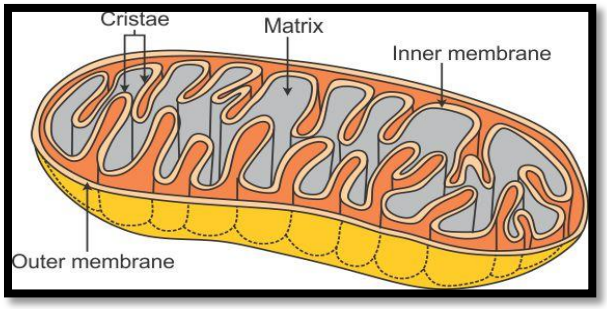
Question 3

A.

Column A	Column B
1. Chloroplast	C. Manufacture of food in plants
2. Cell membrane	E. Entry and exit of materials
3. Ribosomes	D. Synthesis of proteins
4. Amylase	A. Converts starch into maltose
5. Erepsin	B. Converts peptones into amino acids

B. **Structure of the mitochondria**:

1. Mitochondria are oval or rod-shaped structures found scattered throughout the cytoplasm.
2. They are surrounded by a double membrane.
3. The inner membrane has folds called cristae which help to increase its surface area.
4. On the walls of the cristae, food combines with oxygen to produce ATP (Adenosine triphosphate) which is the primary energy source of the cell.

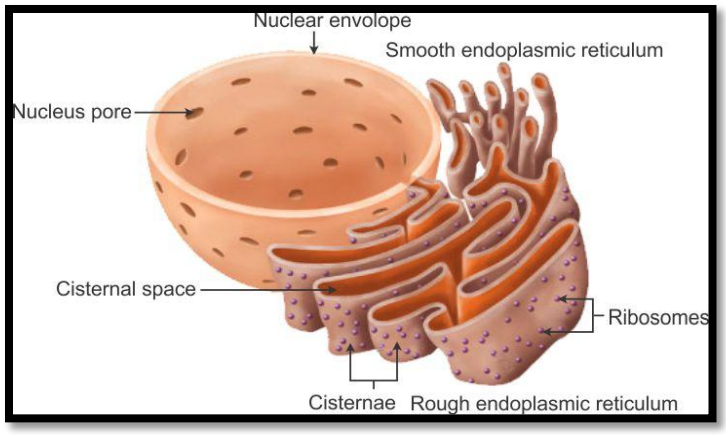


Functions of mitochondria:

1. Mitochondria are termed as the power houses of the cell.
2. They convert the chemical energy stored in food into readily usable biological energy.

Structure of endoplasmic reticulum:

1. Endoplasmic reticulum consists of a series of membrane-bound tubes and chambers within a cell.
2. It's rough appearance is due to the presence of a large number of ribosomes.



Functions of endoplasmic reticulum:

1. The basic function of the endoplasmic reticulum is to store fats and proteins and it also serves as the cell's transport system.

Question 4

A.

If all the seeds had to germinate in the same place, there would be an unhealthy competition for food and light between the plants. Thus, seed dispersal is important, which scatters the seeds far and wide.

The different methods of seed dispersal are as follows –

1. **Dispersal by explosion -** Fruits of plants like pea, bean, castor, etc burst open once they are ripe, thereby scattering the seeds in all directions. This mechanism is also referred as 'explosion'.
2. **Dispersal by wind** - Seeds of certain plants develop wing-like hairy structures, which allow them to be carried away by the wind. Once mature and dry, they burst open and release seeds, which are dispersed by wind. Examples - *Moringa* (drum stick), *Calotropis* (milk weed), etc.
3. **Dispersal by animals** - Certain birds eat fruits like tomato, guava and chilly along with their soft parts. Since these seeds are hard and thick, they escape digestion and are passed out with their droppings. Fruits of plants like *Xanthium* and *Urena* are covered with tiny, hooks and those of spear grass have stiff hairs. When ripe and dry, they cling to the bodies of passing animals or to the clothing of humans and get transported over great distances.
4. **Dispersal by water** - Plants which grow along the coastal regions like coconut tree produce fruits that float in water and hence get transported by the waves. The fruit is protected by a waterproof outer covering.

B.

1. Oesophagus
2. Gall bladder
3. Stomach
4. Pancreas
5. Small intestine

Question 5

A.

1. Cactus are adapted to survive in a desert as they have:
   - No leaves or have spiny leaves to prevent water loss through transpiration.
   - Stem is modified in such a way that it performs photosynthesis and conserves water.
   - Their roots go very deep into the soil for absorbing water.
2. The mountain goat has strong hooves for running up the rocky slopes of mountains for grazing.

B.

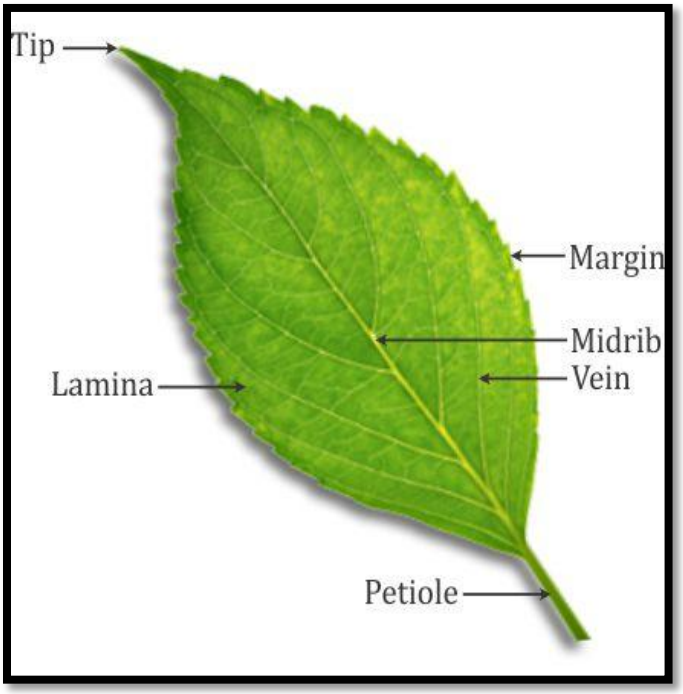
1. Measles. (Measles is a viral disease, while typhoid, diphtheria and tetanus are bacterial diseases.)
2. Dengue. (It is spread by mosquitoes, while conjunctivitis, chicken pox, measles are spread by personal contact with the infected persons.)
3. Mango. (It has simple leaves, while rose, neem and acacia have compound leaves.)
4. Diabetes. (It is a metabolic disorder while night blindness, beriberi and pellagra are vitamin deficiency diseaseas.)
5. Cell wall. (It is found only in plant cells while mitochondria, cytoplasm and cell membrane are found in animal as well as plant cell.)
   Please note that the information provided in brackets is to help you in your learning. It does not have to be included in your answer.

Question 6

A.

The structure of a leaf –

1. **Lamina** – It is the flat, green portion of the leaf and is also known as the leaf blade.
2. **Veins** – They form a supporting framework and transport raw materials and manufactured food in and out of the lamina.
3. **Petiole** – It is a narrow, stalk-like structure connecting the leaf to the stem.
4. **Midrib** – It is the continuation of the petiole and the central vein of the leaf. Smaller veins grow from the midrib.



Structure of a leaf

The functions of leaves are –

1. **Manufacturing of food** – The pigment, **chlorophyll** present in leaves gives the green colour to them. This green pigment helps plants to absorb energy from sunlight and use it to manufacture food from **carbon dioxide** and **water**. This process is termed as **photosynthesis**.

2. **Exchange of gases** –During the daytime, plants take in carbon dioxide and give out oxygen and during the night, oxygen is taken in and carbon dioxide is given out. This exchange of gases takes place by means of small openings called **stomata** which are present in the lower surface of the leaves.

3. **Transpiration** – It is a process by which **plants lose water**, through the stomata. It helps in **cooling the plant**. Also since water is lost, more water is pulled upwards from the roots to replace the lost water. This pulled water carries along important nutrients and minerals from the roots.

B.

1. **Egestion**: Egestion, also called defecation, is the process of removal of undigested food materials left behind after the process of absorption is complete.
2. **Breathing**: Breathing is a physical process of inhalation and exhalation of gases, which occurs outside the cells, with no release of energy during the process.
3. **Internode** - The space between two adjacent nodes is called as an internode.
4. **Plaque** - Plaque is a thin, sticky, transparent film which forms on the surface of teeth, due to germs in the mouth along with saliva and food particles, leading to the decay of the tooth.
5. **Bisexual flower** - A flower which contains both male and female reproductive parts is termed bisexual flower.

Question 7

A.

1. **Modifications in the leaf:**
   - **Support** – In some weak-stemmed plants, the whole **leaf may be modified into** a **tendril** for the purpose of climbing. Example – Wild pea
   - **Protection** – In plants like the cactus, **leaves are modified into spines** so that the loss of water is reduced through transpiration. Spines also provide protection to the plant.
   - **Trapping insects** – ***Nepenthes*** is a plant which usually grows in areas deficient in nitrogen. Hence, to fulfil their nitrogen requirement, the plant eats insects. The leaf is modified in to a pitcher which is partly filled with a fluid and has slippery edges. Insects sitting on the leaves, slip down and fall into the pitcher, where they get trapped in the fluid, and are digested by the plant.

2. Adaptations in birds which help them to fly in air:
   - Boat-shaped or streamlined, light weight body
   - Hollow and light bones

B.

1.
   - In case of snow leopards, the rounded body and small ears help to minimise the body surface area. This reduces heat loss from the body.
   - The animal has big feet to spread its weight on snow and prevent it from sinking into soft snow.

2. Transpiration is the loss of water in the form of water vapour from the aerial parts of the plants.
   <u>Importance of transpiration:</u>
   (a) It keeps the plant body cool.
   (b) When the leaves lose water through transpiration, more water is pulled upwards from the roots by the xylem to replace the loss of water.
   (c) Transpiration also plays an important role in the transport of minerals since the pulled water from the roots also contains certain minerals.