Chapter 8
Organisation of Life

I. Choose the correct answers

Question 1.
…… is tough and thick white sheath that protect the inner parts of the eye.
(a) Sclera
(b) Conjunctiva
(c) Cornea
(d) Iris
Answer:
(a) Sclera

Question 2.
Maintenance of constant internal environment of the body is known as ……
(a) Homeostasis
(b) Homeophytes
(c) Homeokinesis
(d) Homeophilics
Answer:
(a) Homeostasis

Question 3.
In the absence of oxygen, glucose is broken down into ……
(a) Lactic acid
(b) Citric acid
(c) Acetic acid
(d) Nitric acid
Answer:
(a) Lactic acid

Question 4.
…… cells are specialised cells that can be transformed into any kind of cells.
(a) Nerve
(b) Stem
(c) Heart
(d) Bone
Answer:
(b) Stem

Question 5.
The process of air passing in and out the lungs is called ……

(a) Inhalation
(b) Exhalation
(c) Breathing
(d) None of these
Answer:
(c) Breathing

Question 6.
Osmosis is the movement of water molecules from a ……
(a) Higher concentration to a region of lower concentration.
(b) Lower concentration to a region of higher concentration.
(c) Both of these
(d) None of these
Answer:
(a) Higher concentration to a region of lower concentration

Question 7.
The erythrocyte is placed in …… solution which has lesser concentration of solutes and greater concentration of water than in the cytoplasm.
(a) Hypotonic
(b) Hypertonic
(c) Neutral
(d) Acidic
Answer:
(a) Hypotonic

II. Fill in the blanks

1. …… is the structural and functional unit of living organisms.
2. The largest cell is egg of an ……
3. …… is a good example for anaerobic respiration.
4. …… nerve is located at the end of the eyes behind the retina.
5. The size of the cells are measured in units of ……

Answer:

1. Cell
2. Ostrich
3. Fermentation
4. Optic
5. Microns

III. Write true or False. If false, give the correct answer

Question 1.
In hypotonic condition, concentration of the external and the internal solution of the organism are same.
Answer:
False.
Correct statement:
The concentration of external solution is less compared to concentration of internal solution of the organism.

Question 2.
Diffusion is the movement of particles from an area of lower concentration to higher concentration.
Answer:
False.
Correct statement:
Diffusion is the movement of particles from an area of higher concentration to lower concentration.

Question 3.
Human beings are warm blooded in nature.
Answer:
True.

Question 4.
The larynx has fold of tissue which vibrate with the passage of air to produce.
Answer:
True.

Question 5.
Aqueous humour plays an important role in maintaining the shape of the eye.
Answer:
True.

V. Arrange the following words in correct sequence

Question 1.
Tissues, organ system, organism, cell, organ
Answer:
Cell, tissues, organ, organ system, organism.

VI. Answer in brief

Question 1.
What is cell differentiation?
Answer:

Our body develops from a single cell called zygote. The zygote undergoes mitotic division to form many cells of different shape, size and content. These cells attain change in structure and function which is called differentiation. This form the foetus.

Question 2.
State different types of tissues.
Answer:
Depending on the basis of their structure and function, tissues can be classified into four types.

1. Epithelial (covering) tissue for protection.
2. Muscular (contractile) tissue for movements and locomotion.
3. Connective (supporting) tissue for binding different structures of body.
4. Nervous tissue for conduction of nerve impulses.

Question 3.
Mention the function of 'Alveoli'?
Answer:

1. Alveoli are tiny air sacs in the lungs.
2. They are the workhouses of the respiratory system.
3. The exchange of oxygen and carbon dioxide take place in alveoli of the lungs.

Question 4.
Name the processes by which air enters and comes out of our lungs?
Answer:

1. The process of taxing air into the lungs is called inspiration or inhalation.
2. The process of expelling air from the lungs is called expiration or exhalation.

Question 5.
Differentiate between Osmoconformers and Osmoregulators?
Answer:
There are two major types of Osmoregulation:
Osmoconformers:
These organisms try to maintain the osmolality of their body matching with their surroundings. Most of the invertebrates, marine organisms are osmoconformers.

Osmoregulators:
These organisms maintain their internal osmolality, which can be extremely different from that of the surrounding environment, through physiological processes.

Question 6.
Define Metabolism?
Answer:

1. Metabolism is the sum of chemical reactions by which living organisms sustain their life.
2. Metabolism consists of anabolism (the buildup of substances) and catabolism (the breakdown of substances).

VII. Answer in few words

Question 1.
Define Prokaryotic cell?
Answer:
Organisms in which no true nucleus is seen are called prokaryotic. Ex : Bacteria.

Question 2.
Define Eukaryotic cell?
Answer:
Organisms in which true nucleus is seen (presence of nuclear membrane) are called eukaryotic. Ex : Higher plants.

Question 3.
Tabulate the difference between aerobic and an anaerobic respiration.
Answer:

S. No	Aerobic	Anaerobic
1.	Aerobic respiration takes place in the presence of oxygen	Anaerobic respiration takes place in the absence of oxygen
2.	The end products of aerobic respiration are carbon dioxide and water	The end products of anaerobic respiration are CO_2 and ethanol or lactic acid
3	Common in all higher plants and animals	Common in certain micro organisms and human muscle cell

Question 4.
State different types of epithelial cells?
Answer:
The epithelial tissue is a tissue which acts as a covering and protects the underlying tissues. It is classified into the following types.

1. Squamous epithelium.
2. Cuboidal epithelium.
3. Columnar epithelium.
4. Ciliated epithelium.
5. Glandular epithelium.

Question 5.
Why the human eye is compared with camera?
Answer:
The human eye can be compared to a camera as both functions by gathering, focusing, and transmitting the light through the lens for creating an image of an object.

1. The iris of the eye controls the size of the pupil depending on the amount of light entering it.
2. The pupil is like the eyehole of a camera which allows light to come in.
3. Lens : It is a transparent, biconvex, and an adjustable part of an eye, made up of protein. The lens with the help of the cornea refracts light focused on the retina, therefore creating images on it.
4. The retina consists of photoreceptors and converts light rays into impulses to be sent to the brain. It is light sensitive.
   The retina is compared to the film in a camera.

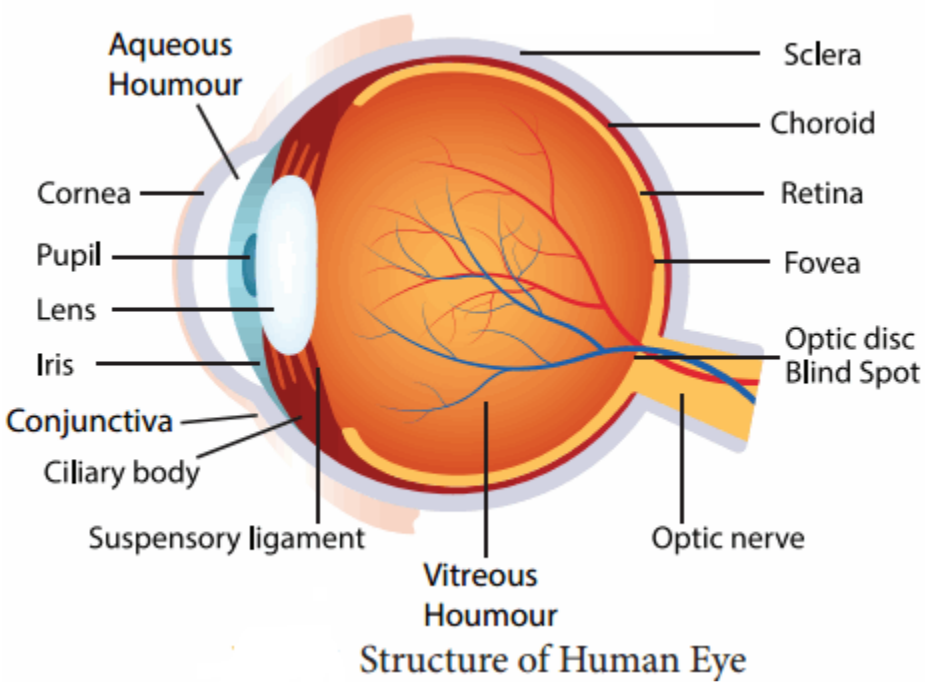
Question 6.
Which organ and organ system help to maintain homeostasis?
Answer:

1. Homeostasis is a property of a human biological system where the self – regulating process tends to maintain the balance for the survival.
2. Behavioural and physiological responses are two important regulating mechanisms that maintain the stability of homeostasis.
3. All the processes of integration and co – ordination of function are mediated by nervous and hormonal system. The liver, kidneys, and brain (hypothalamus), autonomic nervous system and the endocrine system help to maintain homeostasis.

VIII. Answer in detail

Question 1.
Draw the V.S of human eye and label its parts.

Answer:



Structure of Human Eye

Question 2.
Explain Osmosis with an example.
Answer:
Osmosis is the movement of solvent particles across a semipermeable membrane from a dilute solution into a concentrated solution. The solvent moves to dilute the concentrated solution and equalize the concentration on both sides of the membrane. The movement of liquids in and out cells is dependent on the concentration of the solution surrounding it. There are 3 types of situations in which this could vary:

1. Isotonic:
Here the concentration of external and internal solution of the organism are the same.

2. Hypotonic:
Here the external solution concentration is less compared to the concentration of the inner solution of an organism. In this case water will rush into the organism.

3. Hypertonic:
Here the external solution concentration is greater than the concentration of the inner solution of an organism. In this case the water will rush out of the organism.
Example:
Red blood cells.

1. When red blood cells are placed in hypertonic solution, water flows out of the cell faster than it comes in. This results in shrivelling of RBC.

2. On the other hand if RBC is hypotonic, more water will flow into the cell than out. This results in swelling of the cell and followed by bursting.
3. If the RBC is placed in an isotonic solutions, the flow of water in and out of the cell will happen at the same rate.

Question 3.
Differentiate between inhalation and exhalation.
Answer:
Inhalation:

- The muscles of the diaphragm contract.
- The diaphragm goes downward.
- The ribs move upwards and outwards.
- The volume of thoracic (chest) cavity increases.
- Air enters the lungs through the nose.

Exhalation:

- The muscles of the diaphragm relax.
- The diaphragm goes upward.
- The ribs move downwards.
- The volume of thoracic (chest) cavity decreases.
- Air goes out of the lungs through the nose.

Question 4.
Explain about the types of metabolism with an example.
Answer:

1. Metabolism is the sum of chemical reactions by which living organisms sustain their life.
2. Metabolism consists of anabolism (the buildup of substances) and catabolism (the breakdown of substances).

Anabolism:
Anabolism or constructive metabolism, is all about building and storing. It supports the growth of new cells, the maintenance of body tissues, and the storage of energy for use in the future. During anabolism, small molecules are changed into larger, more complex molecules of carbohydrate, protein and fat.

For example,
Glucose → Glycogen and other sugars
Amino acids → Enzymes, hormones and proteins

Catabolism:
Catabolism or destructive metabolism, is the process that produces the energy required for all activity in the cells. In this process, cells break down large molecules (mostly

carbohydrates and fats) to release energy. This energy release provides fuel for anabolism, heats the body, and enables the muscles to contract and the body to move.
Carbohydrates → Glucose
Glucose → CO_2, Water and heat

Question 5.
Explain the mechanism of breathing.
Answer:

1. The process of taking air into the lungs is called inspiration or inhalation.
2. During inspiration, the sternum is pushed up and outward and the diaphragm is pulled down.
3. This increases the volume of the thoracic cavity and the pressure decreases.
4. The air outside the body flows into the lungs. Here exchange of gases takes place between the air and the blood.
5. The process of expelling air from the lungs is called expiration or exhalation. Upon exhalation, the lungs recoil to force the air out of the lungs.
6. The intercostal muscles relax, returning the chest wall to its original position. During exhalation, the diaphragm also relaxes, moving higher into the thoracic cavity.
7. This increases the pressure within the thoracic cavity relative to the environment.
8. Air rushes out of the lungs due to the pressure gradient. This movement of air out of the lungs is a passive event.

Question 6.
Read the given paragraph about human eye carefully and correct the mistakes. Our eye is cylindrical shaped. The wall of the eyeball is composed of five layers. The outermost layer is cornea. The innermost layer is called sclera. The eyeball consists of elastic nerves and biconcave lens. The pupil attaches lens to iris. Iris has rod and cone shaped cells. Aqueous humour is present between lens and retina. The vitreous humour is present between cornea and lens. The brain changes the light into nerve impulses and sends them to retina.
Answer:
Our eye is cylindrical shaped. The wall of the eyeball is composed of three layers. The outermost layer is sclera. The innermost layer is called retina. The eyeball consists of elastic nerves and biconvex lens. The pupil attaches lens to ciliarybody. Retina has rod and cone shaped cells. Vitreous humour is present between lens and retina. The aqueous humour is present between cornea and lens. The retina changes the light into nerve impulses and sends them to brain.

IX. HOT Questions

Question 1.
Why do we need instant energy? Does glucose give that energy? Explain.
Answer:

1. Energy is needed for performing day to day activities of the body which is got through intake of food. This provides energy for all organ systems.
2. Instant energy may be required in cases of extended physical activities like running or physical ailments like tiredness or giddiness.
3. Glucose is the simplest form of carbohydrate. Intake of glucose help it to solubilise in the blood immediately, and is carried to organs of the body thus helping to provide instant energy digestion of carbohydrates also converts it to glucose finally.

Question 2.
How are they preparing pickles? What are the causes involved in that?
Answer:

1. Pickles are prepared usually by addition of excess salt. The salty solution creates a high concentration (hypertonic) in the external medium of the vegetable / fruit which is used for making pickles.
2. Therefore water comes out of the vegatable and it undergoes plasmolysis and begins to shrink.
3. Thus when water content is lost the pickle is able to retain its shelf life for a longer period.

X. Value Based Questions

Question 1.
Dr. Usha is a pulmonologist (Doctor for respiratory diseases). One day, a school student named Arjun, met her with respiratory problems. After diagnosis, the doctor advised him to go playground daily and play football or basketball. She also advised to do pranayamam in the morning.
(a) Why did the doctor advised him to go to the playground?
(b) What is the use of pranayamam?
Answer:
(a) Playing is a good physical activity which helps to improve breathing and blood circulation in the body. It also helps to relieve anxiety.

(b)

1. Pranayamam teaches us the proper way of breathing, slowly and deeply.
2. It increases the capacity of the lungs and brings more oxygen into the body.
3. It is especially very useful when one has respiratory problems and the breathing is irregular and unsteady.
4. It improves blood circulation.

Question 2.
Explain why are you not able to breathe normally when you are in closed and crowded places?
Answer:

In a closed and crowded place, the number of people are more. All of them breathe out carbon dioxide. Therefore the amount of CO_2 in the air is much more than the amount of oxygen available for inhalation. Therefore we find it difficult to breathe in a closed and crowded place.

Question 3.
Shylesh is a school going kid studying standard VIII. He is crazy about playing video games in mobile phones. After couple of months, his eyes turned red and he felt severe pain in his eyes. His science teacher enquired about this and advised his parents to take him to consult an eye doctor.
(i) How does excessive usage of mobile phone affect our eyes?
(ii) What are the values shown by the teacher?
Answer:
Impact of excessive usage of mobile phones:

(i)

1. Cell phone radiation can damage eyes and cause early cataract.
2. It can also lead to cataract in lens apart from affecting retina, cornea etc.
3. It strains the eye muscles.
4. It also caused temporary problems like dry and itchy eyes, blurry vision, pain in eyes etc.

(ii) The teacher has shown values of:

1. Empathy
2. Responsibility
3. Personal care.