Chapter 5 – Life Processes

In-text Questions and Exercise Answers

Life Processes

Question 1.

Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like us?

Answer:

Multicellular organisms have a large body size, and all cells are not directly exposed to the external environment. Diffusion alone cannot supply oxygen to all cells efficiently and quickly; therefore, it is insufficient.

Question 2.

What criteria do we use to determine whether something is living?

Answer:

Life processes such as:

- Respiration
- Nutrition
- Growth
- Excretion
- Reproduction

are used to determine whether something is living.

Question 3.

What raw materials are used by an organism?

Answer:

Organisms use the following raw materials:

- Food
- Water
- Oxygen

Question 4.

Which processes are essential for maintaining life?

Answer:

- Nutrition
- Respiration
- Transportation
- Excretion

Nutrition

Question 5.

What is the difference between autotrophic nutrition and heterotrophic nutrition?

Autotrophic Nutrition	**Heterotrophic Nutrition**
Organisms prepare their own food	Organisms depend on others for food
Example – Green plants	Example – Human beings

Question 6.

From where do plants obtain the raw materials required for photosynthesis?

Answer:

- Carbon dioxide → From air
- Water → From soil
- Sunlight → From the Sun
- Chlorophyll → Present in leaves

Question 7.

What is the role of acid in our stomach?

Answer:

Hydrochloric acid in the stomach creates an acidic medium that activates digestive enzymes and kills harmful bacteria.

Question 8.

What is the function of digestive enzymes?

Answer:

Digestive enzymes convert complex food substances into simple and soluble substances.

Question 9.

How is the small intestine designed for the absorption of digested food?

Answer:

The inner lining of the small intestine has finger-like projections called villi, which increase the surface area for absorption.

Respiration

Question 10.

How are terrestrial organisms more advantageous than aquatic organisms in obtaining oxygen for respiration?

Answer:

Air contains more oxygen than water; therefore, terrestrial organisms can obtain oxygen more easily.

Question 11.

What are the different pathways through which organisms obtain energy from glucose oxidation?

Answer:

1. In the presence of oxygen → Carbon dioxide + Water + Energy
2. In yeast → Ethanol + Carbon dioxide + Energy
3. In muscles during oxygen deficiency → Lactic acid + Energy

Question 12.

How are oxygen and carbon dioxide transported in human beings?

Answer:

- Oxygen is transported by haemoglobin.
- Carbon dioxide is transported dissolved in blood plasma.

Question 13.

How is maximum surface area provided in human lungs for the exchange of gases?

Answer:

Human lungs contain numerous alveoli that provide a very large surface area for gas exchange.

Transportation

Question 14.

What are the components of the transport system in human beings? What are their functions?

Answer:

Components:

1. Heart
2. Blood
3. Blood vessels

Functions:

- Transport of oxygen and nutrients
- Transport of waste materials

Question 15.

Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

Answer:

It helps in efficient supply of oxygen for producing more energy and maintaining body temperature.

Question 16.

What are the components of the transport system in highly organized plants?

Answer:

1. Xylem
2. Phloem

Question 17.

How are water and minerals transported in plants?

Answer:

Xylem tissues transport water and minerals from roots to other parts of the plant.

Question 18.

How is food transported in plants?

Answer:

Food is transported from leaves to other parts of the plant through phloem.

Excretion

Question 19.

Describe the structure and functioning of a nephron.

Answer:

Structure:

A nephron consists of:

- Glomerulus
- Bowman's capsule
- Tubule

Functioning:

1. Filtration of blood
2. Reabsorption of useful substances
3. Removal of waste as urine

Question 20.

What methods do plants use to get rid of excretory products?

Answer:

- Shedding of leaves
- Secretion of gums and resins
- Transpiration

Question 21.

How is the amount of urine regulated?

Answer:

Kidneys regulate the reabsorption of water according to the body's requirement.
This process is controlled by the ADH hormone.