

SECTION B

1. (A) Answer the following sub-questions:

(a) Fill in the blanks and rewrite the completed statements: [2]

- i. Nervous system is absent in _____
ii. Both the parents contribute equal amounts of _____ material to the offspring.

Answer: i. plants
ii. genetic material

(b) State whether the following statements are true or false: [2]

- i. The general formula of alkanes is C_nH_{2n+2}
ii. Carbohydrates are body building nutrients.

Answer: i. True
ii. False
Proteins are the body building nutrients, while carbohydrates are the energy giving nutrients

(c) Considering the relationship in the first pair, complete the second pair: [1]

Root: Vegetative propagation:: Flower : _____

Answer: c. Sexual reproduction
Root: Vegetative propagation:: Flower : _____

(B) Rewrite the following statements by selecting the proper options: [5]

i. The exchange of respiratory gases in the cells of plants occurs by the process of _____

- (A) osmosis
(B) diffusion
(C) glycolysis
(D) exhalation

Answer: (B) diffusion

Air enters the stomatal opening in the plant cells, following which the exchange of respiratory gases is carried out via diffusion.

ii. A solution of _____ in water is green in colour.

- (A) $CuSO_4$
(B) $FeSO_4$
(C) $ZnSO_4$
(D) $Al_2(SO_4)_3$

Answer: (B) $FeSO_4$
The aqueous solution of $FeSO_4$ is in green colour.

iii. _____ type of reproduction takes place in Hydra.

- (A) Budding
- (B) Binary fission
- (C) Multiple fission
- (D) None of the above

Answer: (A) Budding

iv. The process of absorption of water into raisins occurs through its membranes. This process is known as _____

- (A) Absorption
- (B) Osmosis
- (C) Adsorption
- (D) Diffusion

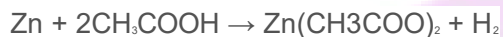
Answer: (B) Osmosis

Osmosis is the process of absorption of water into raisins via its membranes.

v. When zinc powder is added to acetic acid _____

- (A) the mixture becomes warm
- (B) a gas is evolved
- (C) the colour of the mixture becomes yellow
- (D) a solid settles at the bottom

Answer: (B) a gas is evolved

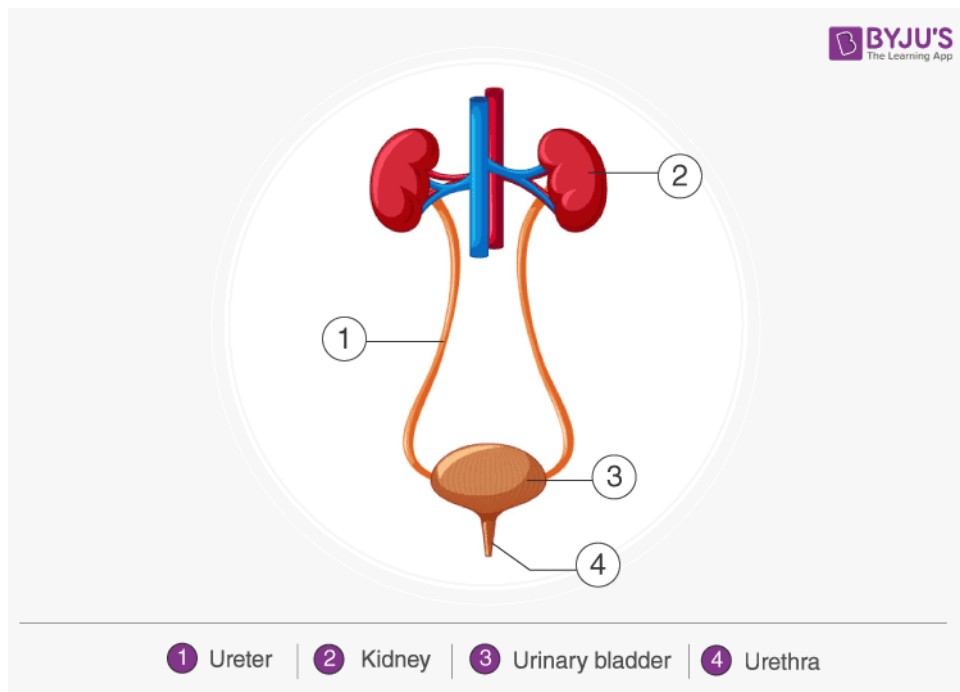


2. Attempt any five of the following:

[10]

i. Draw a neat labelled diagram of the human excretory system.

Answer:

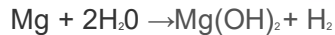


ii. Differentiate between Mendel's monohybrid cross and dihybrid cross

Answer: ii. There are two types of breeding methods monohybrid and dihybrid used to know the working of genes and to analyze how certain traits are inherited from grandparents and parents. Know more about the [difference between monohybrid and dihybrid](#) from the link.

**iii. Explain the following reaction with the help of a balanced chemical equation:
Magnesium reacts with hot water.**

Answer: iii. Magnesium does not react with cold water but it goes on to react with hot water, thus creating magnesium hydroxide and evolving hydrogen gas.



iv. What is recycling? Give one example.

Answer: iv. The green technology of utilising old materials to make new products is known as recycling. Example: used papers and recycled to manufacture cardboards.

v. What are vestigial organs? Give one example.

Answer: Vestigial organs are those organs that are non-functional in some organisms, but may be essential functions for other organisms. Some examples of vestigial organs are the wisdom tooth or tailbone.

vi. Write a short note on Catenation.

Answer: Catenation is the property of the carbon element by which its atoms join one another to form long carbon chains. Know more about [catenation](#).

3. Attempt any five of the following questions:

[15]

i. Write the names of the indicated parts 1 to 6 in the following diagram:



Human Brain

Answer: Given below are the names as indicated by the labels as in the diagram above:

1. Medulla oblongata
2. Pons varolii
3. Corpus callosum
4. Cerebrum
5. Pineal body
6. Cerebellum

ii. What is the need to use eco-friendly technology?

Answer: Eco-friendly technology helps in keeping the environment cleaner. It also helps to curb quick depletion of resources.

iii. State the IUPAC names of the following compounds:

- a. $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-OH}$
- b. HCOOH
- c. $\text{CH}_3\text{-CH}_2\text{-CH=CH}_2$.

- Answer:** a. 1- Propanol
b. Methanoic acid
c. 1-Butene

iv. What is embryology? How does its study lead us to understand evolution?

Answer: The study of development of an organism from an embryo is known as embryology. On studying the embryology of several vertebrates, you will get strong evidence of different vertebrates showing striking similarities. There are obvious similarities between embryos of fish, amphibians, birds, mammals and reptiles. If you compare the embryos of vertebrates you will see that all these organisms have gill sets even if they do not remain later on in life. Only for the fish, the gills remain. This further substantiates the idea of a common ancestor for these organisms. Other common features in the embryos but not in the adult form of these organisms are the limb buds of dolphins and the human tail buds. This adds to the belief that these organisms share an ancestor. For this reason, the developmental process remains the same for all these organisms even in spite of the modifications following their divergence.

v. What are the two types of nerves? Write their functions.

Answer: There are two different types of nerves. One helps to carry the impulses from the brain to the sensory organs and are known as efferent nerves. Meanwhile, the other kind, afferent nerves carry the impulses from the sensory organs back to the brain.

vi. What would be the consequences of the deficiency of haemoglobin in the human body?

Answer: Haemoglobin is the respiratory pigment responsible for transporting the oxygen to the body cells for cellular respiration. For this reason, the deficiency of haemoglobin in blood can affect the oxygen supplying capacity of the blood. This could cause deficiency of oxygen in the blood cells, thus resulting in a disease known as anaemia.

4. Attempt any one of the following:

[5]

i. Answer the following questions with respect to the sexual reproduction in plants:

- State the name of the functional unit concerned with sexual reproduction.
- Name the part made up of the stigma, style and ovary.
- Name the swollen lower part of the carpel.
- Name the male part of the flower.
- Where are the pollen grains produced?

Answer: i.a. Flower is a functional unit concerned with sexual reproduction, in plants

i.b. Pistil is the part that consists of stigma, ovary and style

i.c. Ovary is the swollen part of the carpel

i.d. Stamen is the male organ of the flower

i.e. Anther produces the pollen grains

ii. In the extraction of aluminium:

- Name the process of concentration of bauxite.
- Write the cathode reaction in electrolytic reduction of alumina.
- Write the function and chemical formula of cryolite.
- Write a chemical equation for the action of heat on aluminium hydroxide.
- Why is it necessary to replace anodes from time to time?

Answer: ii. a. Bayer's process is known as the process of concentration of bauxite

ii.b. The cathode reaction in the electrolytic reduction of ammonia is given below:



ii.c. Cryolite is combined with the molten mixture of ammonia, thus reducing the melting point.

Chemical formula of cryolite is Na_3AlF_6 .

ii.d. It is necessary to replace anodes from time to time as it gets easily oxidised as a result of the oxygen that evolves at it.