BIOLOGY

Chapter 7: Diversity in Living Organism

Important Questions

➢ Multiple Choice Questions:

1. Mammals are:

(a) warm-blooded

(b) cold-blooded

(c) both

(d) none of them

2. Reptiles are:

(a) warm-blooded

(b) cold-blooded

(c) both

(d) none of them

3. The book 'Systema Naturae' was written by:

(a) Carolus Linnaeus

(b) Whittaker

(c) Haeckel

(d) None of them

4. How many research papers of Carolus Linnaeus were published on classification?

(a) 12

(b) 13

(c) 14

(d) 16

5. Which among the following produce seeds?

(a) Thallophyta

(b) Bryophyta

(c) Pteridophyta

(d) Gymnosperms

6. Who proposed the nomenclature system of living organisms first of all?

(a) Robert Hooke

(b) Carolus Linnaeus

(c) Leeuwenhoek

(d) Schleiden

7. Who is considered the father of taxonomy?

(a) Carolus Linnaeus

(b) Robert Hooke

(c) Leeuwenhoek

(d) Schleiden

8. Which one is a true fish?

(a) Jellyfish

(b) Starfish

(c) Dogfish

(d) Silverfish

9. Which among the following have an open circulatory system?

(i) Arthropoda

(ii) Mollusca

(iii) Annelida

(iv) Coelenterata

(a) (i) and (ii)

(b) (iii) and (iv)

(c) (i) and (iii)

(d) (ii) and (iv)

10. Gymnosperms are kept under:

(a) Algae

(b) Bryophyta

(c) Tracheophyta

(d) None of them

11. Which among the following have scales?

(i) Amphibians

(ii) Pisces

(iii) Reptiles

(iv) Mammals

(a) (i) and (iii)

(b) (iii) and (iv)

(c) (ii) and (iii)

(d) (i) and (ii)

12. The amphibian animal is:

(a) Fish

(b) Frog

(c) Lizard

(d) Bat

13. Identify a member of Porifera:

(a) Spongilla

(b) Euglena

(c) Penicillium

(d) Hydra

14. Two chambered heart occurs in:

(a) crocodiles

(b) fish

(c) aves

(d) amphibians

➢ Very Short Question:

1. Who wrote the book "The Origin of Species"?
2. Who proposed the classification of organisms into 5 kingdom?
3. Define species.
4. Give example of the organism belonging to Monera and Protista Kingdom.
5. Name the appendages used for movement by organism belonging to Protista kingdom.
6. What is lichen?
7. What is symbiotic relationship?
8. What is saprophytic nutrition?
9. Give simple dassificatian of plant kingdom.
10. Name the plant amphibian.

➢ Short Questions:

1. Give the characteristics of Monera.

2. Give the characteristics of Protista.
3. Give the difference between thallophyte and bryophyte.
4. What are hermaphrodites? Give two examples.
5. Give the difference between monocots and dicots.
6. Give the difference between two types of symmetry that animals show.
7. Differentiate between vertebrates and invertebrates.
8. Name the phylum of the following animals:

(a) Tapeworm (b) Starfish

(c) Jellyfish (d) Octopus

➢ Long Questions:

1. Write a note on plant tissues.
2. Show the types of animal tissues using flow chart.
3. What is connective tissue? Explain its types.

➢ Assertion Reason Questions:

1. For two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
   a. Both Assertion and Reason are correct, and reason is the correct explanation for assertion.
   b. Both Assertion and Reason are correct, and Reason is not the correct explanation for Assertion.
   c. Assertion is true but Reason is false.
   d. Both Assertion and Reason are false.

   Assertion: Nucleus can be A basic characteristic of animal classification.

   Reason: Nucleated cells have capacity to participate making multicellular organism because they can take up specialised function.
2. For two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
   a. Both Assertion and Reason are correct, and reason is the correct explanation for assertion.
   b. Both Assertion and Reason are correct, and Reason is not the correct explanation for Assertion.

c. Assertion is true but Reason is false.

d. Both Assertion and Reason are false.

Assertion: Nucleus can be A basic characteristic of animal classification.

Reason: Nucleus is the only organelle present in the cell which shows animal characters.

➢ Case Study Questions:

1. Biologists, such as Ernst Haeckel (1894), Robert Whittaker (1969) and Carl Woese (1977) have tried to classify all living organisms into broad categories, called kingdoms.

The classification Whittaker proposed has five kingdoms: Monera, Protista, Fungi, Plantae and Animalia, and is widely used. These groups are formed on the basis of their cell structure, mode and source of nutrition and body organisation.

The modification Woese introduced by dividing the Monera into Archaebacteria (or Archaea) and Eubacteria (or Bacteria) is also in use. Further classification is done by naming the sub-groups at various levels as given in the following scheme:

Kingdom

↓

Phylum (for animals) / Division (for plants)

↓

Class

↓

Order

↓

Family

↓

Genus

↓

Species

Thus, by separating organisms on the basis of a hierarchy of characteristics into smaller and smaller groups, we arrive at the basic unit of classification, which is a 'species'. A species includes all organisms that are similar enough to breed and perpetuate.

(i) Who proposed Five Kingdoms?

(a) Ernst Haeckel (1894)

(b) Robert Whittaker (1969)

(c) Carl Woese (1977)

(d) None of above

(ii) Which of the following kingdom is a part of five kingdom system?

(a) Monera

(b) Protista

(c) Animalia

(d) All of the above

(iii) Kingdom Monera divided into

(a) Archaebacteria

(b) Eubacteria

(c) Both a & b

(d) None of above

(iv) A groups of five kingdom are formed on the basis of

(a) Cell structure,

(b) Mode and source of nutrition

(c) Body organisation.

(d) All of the above

(5) What is species?

2. The first level of classification among plants depends on whether the plant body has well differentiated, distinct parts. The next level of classification is based on whether the differentiated plant body has special tissues for the transport of water and other substances. Further classification looks at the ability to bear seeds and whether the seeds are enclosed within fruits.

THALLOPHYTA

Plants that do not have well-differentiated body design fall in this group. The plants in this group are commonly called algae. These plantsare predominantly aquatic. Examples are Spirogyra, Ulothrix, Cladophora, Ulva and Chara.

BRYOPHYTA

These are called the amphibians of the plant kingdom. The plant body is commonly differentiated to form stem and leaf-like structures. There is no specialised tissue for the conduction of water and other substances from one part of the plant body to another. Examples are moss (Funaria) and Marchantia.

PTERIDOPHYTA

In this group, the plant body is differentiated into roots, stem and leaves and has specialised tissue for the conduction of water and other substances from one part of the plant body to another. Some examples are Marsilea, ferns. The reproductive organs of plants in all these three groups are very inconspicuous, and they are therefore called 'cryptogams', or 'those with hidden reproductive organs'. On the other hand, plants with welldifferentiated reproductive parts that ultimately make seeds are calledphanerogams. This group is further classified, based on whether the seeds are naked or enclosed in fruits, giving us two groups – gymnosperms and angiosperms.

Gymnosperms are the plants which bear naked seeds and are usually perennial, evergreen and woody. Examples are pines and deodar. Angiosperms are the plants which seeds are enclosed inside an ovary.

(i) Plants that do not have well-differentiated body is known as _____.

(a) Bryophytes

(b) Pteridophytes

(c) Thallophytes

(d) Angiosperms

(ii) The plants which bear naked seeds:

(a) Angiosperms

(b) Gymnosperms

(c) Thallophytes

(d) Pteridophytes

(iii) Phanerogams are further classified into:

(a) Angiosperms

(b) Gymnosperms

(c) Thallophytes

(d) Both a & b

(iv) Which of the following is the distinguishing feature of Bryophytes:

(a) Plant body is differentiated to form stem and leaf-like structures

(b) No specialised tissue for the conduction of water and food

(c) Both a & b

(d) None of above

(v) Explain the three important aspect on which classification of Plantae?

✓ **Answer Key-**

➢ Multiple Choice Answers:

1. (a) warm-blooded
2. (b) cold-blooded
3. (a) Carolus Linnaeus
4. (c) 14
5. (d) Gymnosperms
6. (b) Carolus Linnaeus
7. (a) Carolus Linnaeus
8. (c) Dogfish
9. (a) (i) and (ii)
10. (c) Tracheophyta
11. (c) (ii) and (iii)
12. (b) Frog
13. (a) Spongilla
14. (b) fish

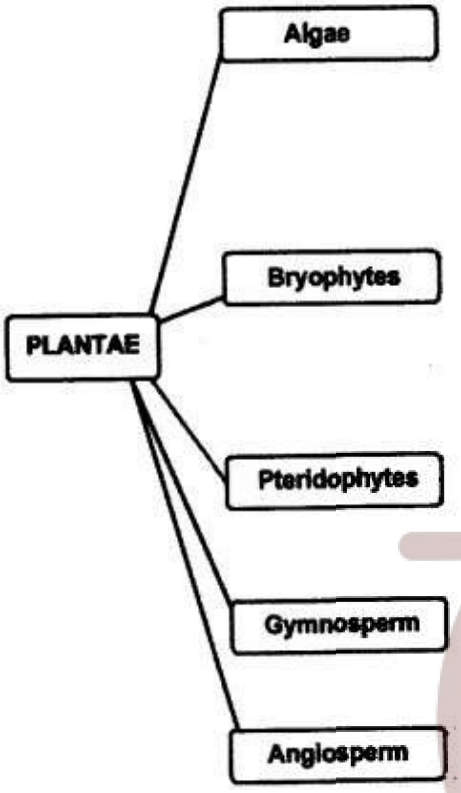
➢ Very Short Answers:

1. Answer: Charles Darwin in 1859.
2. Answer: Robert Whittaker (1959).
3. Answer: All organisms that are similar to breed and perpetuate.
4. Answer: Monera, Anabaena, blue-green algae Protista—Eugleno, Paramecium, Amoeba
5. Answer:

   Paramecium – Cilia

   Euglena – Flagella

   Amoeba – Pseudopodia
6. Answer: The symbiotic association of fungi and blue-green algae, is called lichen.
7. Answer: It is a relationship between two organisms in which both of them are benefitted, e.g., fungi gets food from blue-green algae and in return blue-green gets shelter [lichens].
8. Answer: The organisms using dead and decaying organic matter as food are said to show saprophytic nutrition.
9. Answer:



10.Answer: Bryophyta e.g., Funaria (Moss).

➢ Short Answer:

1. Answer:

   (a) Organisms are unicellular, do not have a defined nucleus.

   (b) Organisms may have cell wall or may not have cell wall.

   (c) Mode of nutrition is either autotrophic or heterotrophic.

2. Answer:

   (a) Organisms are unicellular and eukaryotic.

   (b) Use appendages for locomotion like cilia, flagella, etc.

   (c) Nutrition is either autotrophic or heterotrophic.

   (d) E.g., algae, protozoa.

3. Answer:

Thallophyte	Bryophyte
Body is thallus like not differentiated into -root, stem. Example: Spirogyra.	Plant Body is differentiated into stem and leaf like structures. Example: Moss.

4. Answer: When an organism has both the sexes, i.e., it can produce both sperms and eggs are called hermaphrodites. Example: Sponges, earthworms.
5. Answer:

Monocots	Dicots
1. Seeds with one cotyledon.	Seeds with two cotyledons.
2. Leaves have parallel venation.	Leaves have reticulate venation.
3. Root system—fibrous.	Root system—tap root.

6. Answer: Symmetry—Bilateral and Radial

Bilateral Symmetry	Radial Symmetry
Any organism that has same design on left and right halves of the body. Example: Earthworm, spider, cockroach.	Any organisms with a body design such that it can be divided into two equal halves from any radius. Example: Starfish sea urchin.

7. Answer:

Vertebrates	Invertebrates
1. Notochord is present.	Notochord is absent.
2. True internal skeleton present.	No true internal skeleton present.

8. Answer:
   (a) Tapeworm – Flatyhelminthes
   (b) Starfish – Echinodermatai

(c) Jellyfish – Coelenterata

(d) Octopus – Mollusca

➢ Long Answer:

1. Answer: Plant tissues consist of two main types of tissue.

Meristematic tissue
The cells in this tissue divide very fast and helps in the growth of plants. Cells are round, oval, polygonal, no intercellular spaces. Present at tips of root, shoot, at nodes and at the sides of the stem.

and

Permanent tissue
The cells of meristematic tissue stops dividing, matures and forms permanent tissue. There are two types of permanent tissues.

Simple tissue
All cells are same in structure and perform same function. Types of simple tissue are parenchyma, collenchyma and sclerenchyma.

Complex tissue
It consists of group of different types of cells to perform same function. Types of complex tissue are xylem and phloem.

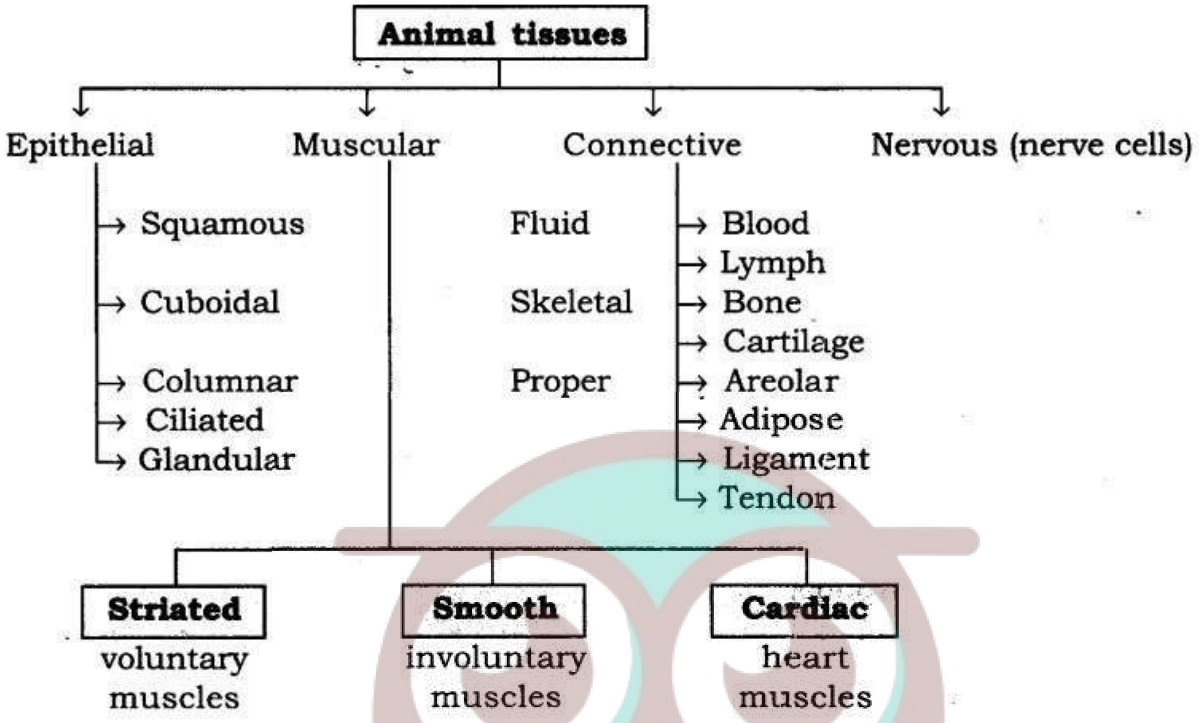
Parenchyma: Present in soft parts of the plant.

Collenchyma: Provides mechanical support to plant present in stalks. Sclerenchyma: They provide strength and flexibility to the plants.

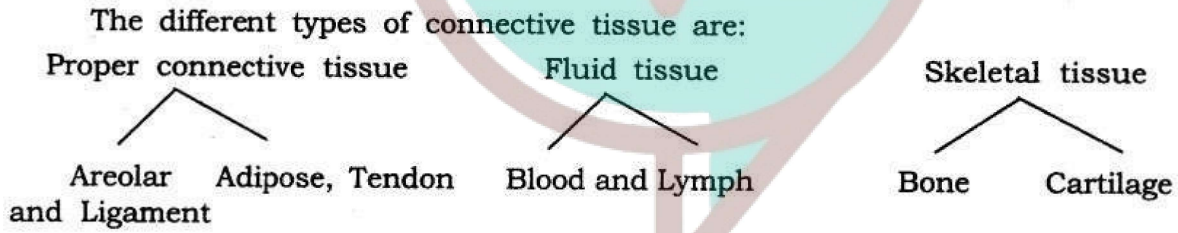
Xylem: Conduct water in plants from root to shoot. Consists of tracheids, vessels, xylem parenchyma and xylem fibres.

Phloem: Conduct food to all parts of plant. Consist of sieve tubes, companion cell, phloem parenchyma and phloem fibres.

2. Answer:



3. Answer: The connective tissue consists of different types of cells, all of them perform same function.



Areolar connective tissue: It is found between the skin and muscles, around blood vessels and nerves and in the bone marrow.

Areolar tissue fills the space inside the organs. It supports internal organs and helps in repair of tissues.

Adipose tissue: Adipose tissue stores fat, found below the skin and between internal organs. The cells of this tissue are filled with fat globules. It acts as insulator due to fat storage.

Blood: It has a fluid called plasma, in plasma are present red blood cells, white blood cells and platelets. Blood flows all over the body and helps in the transport of gases, digested food, hormones and waste material to different parts of the body.

Lymph: Lymph carries digested fat and lot of white blood cells in the plasma. Bone: It forms the framework that supports the body. It supports the different parts of our body. It is strong and non-flexible tissue.

Cartilage: It is present in nose, ear, trachea and larynx. It smoothens bone surfaces at joints.

Tendon: It connects bone and muscles. These tissues are fibrous, flexible and with lot of strength.

Ligament: It connects bone to 'bone. It is elastic, has lot of strength.

➢ Assertion Reason Answer:

1. (a) Both Assertion and Reason are correct, and reason is the correct explanation for assertion.
2. (c) Assertion is true but Reason is false.

➢ Case Study Answers:

1.

(i) (b) Robert Whittaker (1969)

(ii) (d) All of the above

(iii) (c) Both a & b

(iv) (d) All of the above

(v) By separating organisms on the basis of a hierarchy of characteristics into smaller and smaller groups, we arrive at the basic unit of classification, which is a 'species'. A species includes all organisms that are similar enough to breed and perpetuate.

2.

(i) (c) Thallophytes

(ii) (b) Gymnosperms

(iii) (d) Both a & b

(iv) (c) Both a & b

(v) The first level of classification among plants depends on

- Whether the plant body has well differentiated, distinct parts
- Whether the differentiated plant body has special tissues for the transport of water

The ability to bear seeds and whether the seeds are enclosed within fruits