Unit 5 - Basis of Classification

Class: VII

Subject:Science

I. Choose the correct answer.

1. The following characteristics are essential for classification.
   (a) Similarities (b) Differences
   (c) Both of them **(d) None of them**
2. Approximately _____ species of living organisms found in the earth.
   (a) 8.7 million (b) 8.6 million (c) 8.5 million (d) 8.8 million
3. The largest division of the living world is _____
   (a) Order **(b) Kingdom** (c) Phylum (d) Family
4. Who proposed the five kingdom of classification?
   (a) Aristotle (b) Linnaeus **(c) Whittakar** (d) Plato
5. The binomial name of pigeon is _____
   (a) Homo sapiens (b) Rattus rattus
   (c) Mangifera indica **(d) Columbo livia**

II. Fill in the blanks.

1. **Gaspard Bauhin** in 1623, introduced the binomial nomenclature.
2. Species is the **Basic** unit of classification.
3. **Fungi** are non- green and nonphotosynthetic in nature.
4. The binomial name of onion is **Hum sativum**
5. Carolus Linnaeus is known as the Father of **Modern Taxonomy**

III. True (or) False. If false write the correct answer.

1. Classification helps to know the origin and evolution of an organism. **True**
2. Fishes are aquatic vertebrates. **True**
3. In the year 1979, Five kingdom classification was proposed. **False**
4. True nucleus is seen in prokaryotic cell. **False**
5. Animal cells have cell wall. **False**

IV. Match the following.

1. Monera - Bacteria
2. Protista - Euglena
3. Fungi - Moulds
4. Plantae - Neem
5. Animalia - Butterfly

V. Assertion and Reason Questions

1. **Assertion:** Binomial name is the universal name and contains two names.

Reason : It was first introduced by Carolus Linnaeus

a. Assertion is correct, Reasoning is correct

b. Assertion is correct, Reasoning is incorrect

c. Assertion is incorrect Reasoning is correct

d. Assertion and Reasoning are incorrect

2. **Assertion:** Identification, assortment and grouping are essential for classification

Reason : These are basic steps of taxonomy

a. Assertion is correct, Reasoning is correct

b. Assertion is correct, Reasoning is incorrect

c. Assertion is incorrect Reasoning is correct

d. Assertion & Reasoning is incorrect

VI. Give very short answer

1. What is classification?

The method of arranging the organisms into groups is called classification

2. List out the five kingdoms classification

- Monera
- Protista
- Fungi
- Plantae
- Animalia

3. Define – dichotomous key

It is a tool used to classify organisms based on their similarities and differences.

4. Write two examples of Monera.

Bacteria and Blue green algae are example for monera

5. What is binomial nomenclature?

- Binomial nomenclature is an universal system of naming organisms.
- As per this system, each organism has two names – the first is the Genus name and the second is the Species name.

6. Write the binomial name of a) Human being b) Paddy

(a) Human being – Homo sapiens

(b) Paddy – Oryza sativa

7. Write two features of protista

- The Kingdom Protista includes unicellular and a few simple multicellular eukaryotes.
- There are two main groups of protists.
- The plant like protists are photosynthetic and are commonly called algae.
- Algae include unicellular and multicellular types. Animals like protists are often called protozoans.
- They include amoeba and paramecium.

VII. Give short answer

1. Write the levels of classification.

There are seven main categories of hierarchies namely,

- Kingdom,
- Phylum,
- Class,
- Order,
- Family,
- Genus and
- Species- Species is the basic unit of classification

2. Differentiate plantae and animalia

Kingdom Plantae:

- Planatae (plants) are multicellular eukaryotes that carry out photosynthesis. Reserve food materials are starch and lipids in the form of oil or fat.
- Plant cells have cell wall and specialized functions, such as photosynthesis, transport of materials and support. Kingdom Plantae includes ferns, cone bearing plants and flowering plants.

Kingdom Animalia:

- Animalia (animals) are multicellular, eukaryotic and heterotrophic animals. Cells have no cell wall. Most members of the animal kingdom can move from place to place.
- Eg. Invertebrates like sponges, hydra, flatworms round worms, insects, snails, starfishes.
- Vertebrates like Fish, amphibians, reptiles, birds, and mammals including human beings belong to the kingdom Animalia.

3. Write any two merits of Five Kingdom classification.

- This system of classification is more scientific and natural.
- This system of classification clearly indicates the cellular organization, mode of nutrition, and characters for early evolution of life.
- It is the most accepted system of modern classification as the different groups of organisms are placed phylogeny
- It indicates gradual evolution of complex organisms from simpler one.

VIII. Give answer in Detail

1. Explain about five kingdom classification.

- The five kingdom classification was proposed by R.H.Whittaker in 1969.
- He classified the organisms into five kingdoms on the basis of characteristics like cell structure, mode of Nutrition, Source of Nutrition and body organization.

Characteristics	Monera	Protista	Fungi	Plantae	Animalia
1. Cell Type	Unicellular, Prokaryotic.	Unicellular, Eukaryotic.	Multicellular, Non – green and Eukaryotic.	Multicellular, Eukaryotic.	Multicellular, Eukaryotic.
2. Nucleus	Absent.	Present.	Present.	Present.	Present.
3. Body Organisation	Cellular level of organization	Cellular level of organization is	Multi cellular with loose tissue.	Tissue level and organ level.	Tissue, organ and organ system.
4. Mode of Nutrition	Auto (or) Heterotrophic.	Auto (or) Heterotrophic.	Saprophytic, parasitic sometime symbiotic	Autotrophic.	Heterotrophic.
5. Example	Bacteria and Blue green algae.	Spirogyra and Chlamydomonas.	Rhizopus and Agaricus.	Herb, Shrub and Trees.	Fish, frog, crocodile, Birds and human being

2. Write short notes on – Binomial Nomenclature.

(i) Gaspard Bauhin jn 1623, introduced naming of organisms with two names which is known as Binomial nomenclature, and it was implemented by Carolus Linnaeas in 1753

(ii) Binomial nomenclature an universal system of naming organisms. As per this system, each organism has two names – the first is the Genusname and the second is the Speciesname.

(iii) Genus name begins with a capital letter and Species name begins with a small letter. Example The nomenclature for onion is Allium sativam. Genus name is Allium, species name is sativam.

(iv) Vernacular name is a local name that is familiar for a particular place. Binomial name is an universal name which never changes.

(v) Binomial nomenclature and classification helps scientists to identify any organisms and to place them at a particular hierarchy.

3. Give an account on the classification of invertebrates with few general features and examples.

S.No	Division	General Characters
1.	Phylum Protozoa Eg. Amoeba, Euglena p	Microscopic unicellular, pseudopodia, flagella and cilia for locomotion, reproduce by fission or conjugation.
2.	Phylum Porifera Eg. Leucosolenia, Sycon.	Multicellular organisms with holes in the body. Skeleton formed of spicules, asexual and sexual reproduction.
3.	Phylum Coelenterata Eg. Hydra, Jelly fish.	Multicellular organisms Diploblastic, sessile or free swimming, solitary or colonial, asexual and sexual reproduction
4.	Phylum Platyhelminthes Eg. Planaria, Liver fuke	Acoelomates, parasites inside the body of animals and human beings, mostly hermaphrodite (bisexual).
5.	Phylum Aschelminthes or Nematoda Eg. Ascaris lumbricoides	Unsegmented body, mostly parasites in human beings and animals, causing diseases, asexual reproduction.
6.	Phylum Annelida Eg. Earthworm, Leech.	Triploblastic, segmented body, mostly hermaphrodite (bisexual and unisexual).
7.	Phylum Arthropoda Eg. Crab, Prawn	Segmented body, thick chitinous cuticle forming an exoskeleton, paired and jointed legs, unisexual exhibits sexual dimorphism.
8.	Phylum Mollusca Eg. Cuttle fish, Snail	Soft bodied, unsegmented, muscular head, foot and visceral mass, mantle, a calcareous shell, sexual reproduction.
9.	Phylum Echinodermata Eg. Starfsh, Sea – Urchin	Exclusively marine, spines and spicules over the body, water vascular system, tube feet, for feeding, respiration and locomotion sexual reproduction.

IX. HOTS

1. Which kingdom has saprophytic, parasitic and symbiotic nutrition? Why?

Kingdom Fungi comprises of unicellular to multicellular organisms which are heterotrophic in their mode of nutrition. They do not contain chlorophyll and cannot photosynthesize. Hence they show modes of Nutrition such as:

- Saprophytic – Obtaining nutrition from dead matter Eg. Mucor
- Parasitic – Obtaining nutrition from living organisms Eg. Cercospora
- Symbiotic – Obtaining nutrition through a mutually beneficial relationship with another organism. Eg. Lichens