Chapter 5

Basis of Classification

Textual Evaluation

I. Choose the correct answer:

Question 1.
The following characteristics are essential for classification.
(a) Similarities
(b) Differences
(c) Both of them
(d) None of them

Answer:
(c) Both of them

Question 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

Answer:
(a) 8.7 million

Question 3.
The largest division of the living world is
(a) Order
(b) Kingdom
(c) Phylum
(d) Family

Answer:
(b) Kingdom

Question 4.
Who proposed the five kingdom of classification?
(a) Aristotle
(b) Linnaeus

(c) Whitakar
(d) Plato

Answer:
(c) Whitakar

Question 5.
The binomial name of pigeon is
(a) Homo sapiens
(b) Rattus rattus
(c) Mangifera indica
(d) Columbo livia

Answer:
(d) Columbo livia

II. Fill in the blanks

1. _____ in 1623, introduced the binomial nomenclature.
2. Species is the _____unit of classification.
3. _____ are non- green and non-photosynthetic in nature.
4. The binomial name of onion is _____
5. Carolus Linnaeus is known as the Father of _____

Answer:

1. Gaspard Bauhin
2. Basic
3. Fungi
4. Hum sativum
5. Modern Taxonomy

IV. Match the following:

Question 1.

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

Answer:

1. Monera – Bacteria

2. Protista – Euglena
3. Fungi – Moulds
4. Plantae – Neem
5. Animalia – Butterfly

V. Assertion and Reason Questions:

Question 1.
Assertion (A) : Binomial name is the universal name and contains two names.
Reason (R) : 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

Answer:
(b) Assertion is correct, Reasoning is incorrect

Question 2.
Assertion (A) : Identification, assortment and grouping are essential for classification.
Reason (R) : 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.

Answer:
(a) Assertion is correct, Reasoning is correct

VI. Give very short answer:

Question 1.
What is classification?

Answer:
The method of arranging the organisms into groups is called classification

Question 2.
List out the five kingdoms classification.

Answer:

1. Monera

2. Protista
3. Fungi
4. Plantae
5. Animalia

Question 3.
Define – dichotomous key.

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

Question 4.
Write two examples of Monera.

Answer:
Bacteria and Blue green algae.

Question 5.
What is binomial nomenclature?

Answer:
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.

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

Answer:
Binomial name
(a) Human being – Homo sapiens
(b) Paddy – Oryza sativa

Question 7.
Write two features of protista.

Answer:

1. It includes unicellular and few simple multicellular eukaryotes.
2. It includes plant like protists (Algae) and animal like protists (protozoans)

VII. Give short Answer :

Question 1.
Write the levels of classification.

Answer:
There are seven main categories of hierarchies namely, Kingdom, Phylum, Class, Order, Family, Genus and Species- Species is the basic unit of classification

Question 2.
Differentiate plantae and animalia

Answer:
Kingdom plantae

1. They are multicellular eukaryotes that can photosynthesize.
2. The cells have cell wall.
3. The cells can perform specialised functions like photosynthesis.
4. Eg. Ferns, cone bearing plants and flowering plants

Kingdom Animalia

1. They are multicellular, eukaryotic and heterotrophic animals.
2. The cells lack cell wall.
3. They cannot photosynthesize but animals move from place to place unlike plants.
4. Eg. Invertebrates and Vertebrates

Question 3.
Write any two merits of Five Kingdom classification.

Answer:

1. This system of classification is more scientific and natural.
2. This system of classification clearly indicates the cellular organization, mode of nutrition, and characters for early evolution of life.

VII. Give answer in Detail:

Question 1.
Explain about five kingdom classification.

Answer:

1. The five kingdom classification was proposed by R.H.Whittaker in 1969.
2. 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	Cellular level	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

Question 2.
Write short notes on – Binomial Nomenclature.

Answer:
(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.

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

Answer:
Invertebrates are animals without a backbone. The invertebrates have been classified into various phyla as follows:

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 :

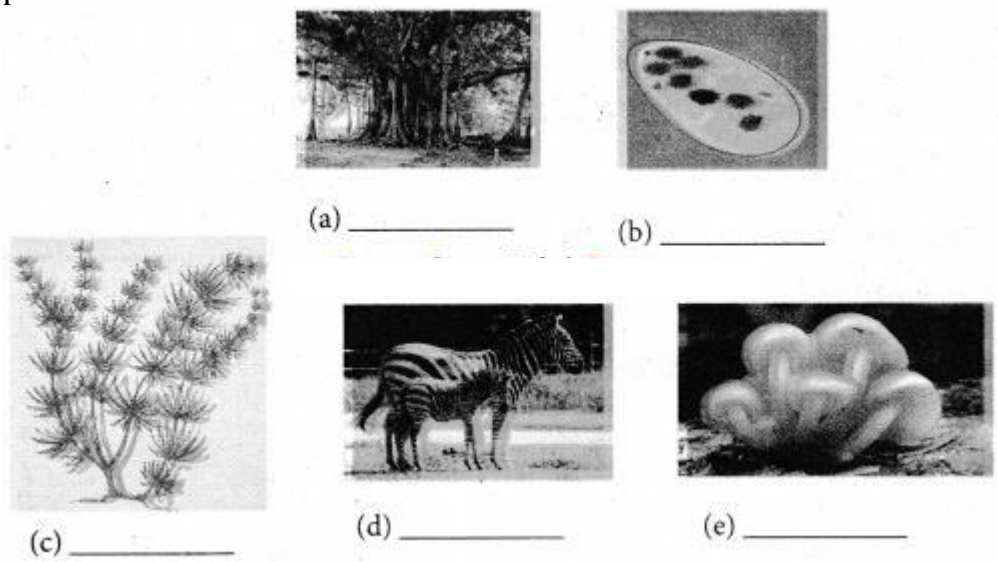
Question 1.
Which kingdom has saprophytic, parasitic and symbiotic nutrition. Why?
Answer:
Kingdom Fungi comprises of unicellular to multicellular organisms which are

heterotrophic in their mode of nutrition. They do not contain chlorophyll and cannot photosynthesize. Hence they show modes of Nutrition such as:

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

X. See the Diagram and write The Kingdom:

Question 1.
Pictures of some living organisms are given below. Identify the kingdom to which each of these belong and write the kingdom name in the blanks provided.



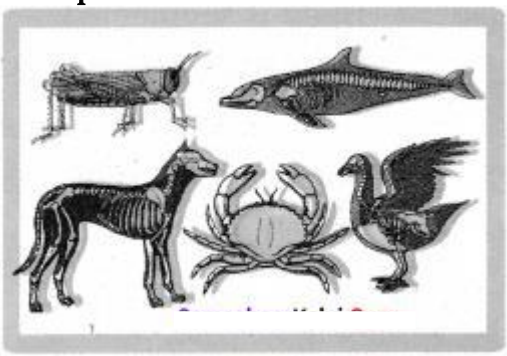
Answer:
(a) Kingdom plantae
(b) Kingdom protista
(c) Kingdom protista
(d) Kingdom Animalia
(e) Kingdom Fungi

Samacheer Kalvi 7th Science Basis of Classification Intext Activities.

Activity- 2

Question 1.

Fill up the blanks with the suitable organisms



1. Vertebrates _____ , _____ and _____
2. Invertebrates _____, _____ and _____.
3. Name the vertebrates with wings _____, _____.
4. Name the invertebrates with wings _____, _____.
5. Name the invertebrates with segmented legs _____, _____.
6. Name the invertebrates with Jointed legs _____, _____.
7. Name the warm blooded vertebrates _____.
8. Name the cold blooded vertebrates _____.
9. Name the vertebrates with lungs respiration _____, _____.
10. Name the animal with beak _____.

Answers:

1. Fishes, Amphibians, Mammals.
2. Protozoa, Porifera, Annelida.
3. Bat, Pigeon.
4. Butterfly, Dragon fly.
5. Millipedes, Centipedes.
6. Crab, Prawn.
7. Mammals.
8. Fishes.
9. Birds, Mammals.
10. Birds

Activity – 3

Given table shows the name of the phylum and its characteristic features.

Write name of the animals belonging to the respective phylum

Phylum	Characters	Example
Porifera	Pore bearers	Sycon
Coelenterata	Gastro vascular cavity	Jelly fish
Platyhelminthes	Flame cells	Tape worm
Aschelminthes	Thread like worms	Round worm
Annelida	Body is segmented	Leech
Arthropoda	Have jointed legs	Cockroach
Mollusca	Soft bodied with shells	Snail
Echinodermata	Spines on the skin	Star fish
Chordata	Have back bone	Human being

Additional Questions

I. Choose the correct answer.

Question 1.
_____ belongs to Phylum Platyhelminthes.
(a) Ascaris
(b) Liver fluke
(c) Leucosolcnia
(d) Euglena

Answer:
(b) Liver fluke

Question 2.
_____ are diploblastic.
(a) Protozoa
(b) Annelida
(c) Coelenterata
(d) Echinodermata

Answer:
(c) Coelenterata

Question 3.
_____ is not a characteristic of Phylum Echinodertnata.
(a) Water vascular system
(b) Tube feet
(c) Pores in the body
(d) Spicules

Answer:
(c) Pores in the body

Question 4.
Bones with air cavities ate seen in _____
(a) snail
(b) pigeon
(c) bats
(d) cuttle fish

Answer:
(b) pigeon

Question 5.
_____ is not oviparous.
(a) Snake
(b) Crow
(c) Frog
(d) Human being

Answer:
(d) Human being

Question 6.
Plant is a thallus in _____
(a) Algae
(b) Ferns
(c) Bacteria
(d) Pinus

Answer:
(a) Algae

Question 7.
Naked ovules are seen in _____
(a) Cycas
(b) Funaria
(c) Mango
(d) Chara

Answer:
(a) Cycas

Question 8.
_____ is not a fugus.
(a) Yeast
(b) Chlamydomonas.
(c) Rhizopus
(d) Agaricus

Answer:
(b) Chlamydomonas

Question 9.
_____ belong to Monera.
(a) Blue green algae
(b) Yeast
(c) Mushrooms
(d) Red algae

Answer:
(a) Blue green algae

Question 10.
_____ are called Amphibious plants.
(a) Ferns
(b) Mosses
(c) Fungi
(d) Gymnosperms

Answer:
(b) Mosses

II. Fill in the Blanks.

Question 1.

1. _____ was a greek philosopher who classified animals.
2. Paired and jointed legs are seen in phylum _____
3. Giving birth to young ones is described as_____
4. Animals belonging to phylum _____ are mostly parasites.
5. Flowering plants belong to_____
6. _____ are considered to be first land plants,
7. _____ are dominant plant forms of present day.
8. All prokaryotic belong to kingdom_____
9. Scientific name for Human being is _____
10. Cones are produced by _____

Answer:

1. Aristotle
2. Arthropoda
3. Viviparous
4. Aschelminthes
5. Angiosperms
6. Ferns
7. Angiosperms
8. Monera
9. Homo sapiens
10. gymnosperms

III. True or False – if false give the correct statement.

Question 1.
Animals belonging to phylum protozoa reproduce by fission.

Answer:
True

Question 2.
Specialised vascular tissues for conduction of food and water are seen in mosses.

Answer:
False. Specialised vascular tissues for conduction of food and water are seen in ferns ‘

Question 3.
Angiosperms are divided into monocots and dicots.

Answer:
True

Question 4.
The angiosperms are evergreen trees.

Answer:
False. The gymnosperms are evergreen trees.

Question 5.
Fungi need water to complete their life cycle.

Answer:
False. Mossesneed water to complete their life cycle

IV. Match the following:

Question 1.

1. Protozoa- (a) Spongy bones
2. Annelida- (b) Hermaphrodite
3. Coelenterata- (c) Soft body
4. Aves- (d) Colonial forms
5. Mollusca- (e) Conjugation

Answer:

1. -e
2. -b
3. -d
4. -a
5. -c

Question 2.

1. Fungi- (a) Funaria
2. Mosses- (b) Cycas
3. Gymnosperms- (c) Adiantum
4. Flowering Plants- (d) Agaricus
5. Ferns- (e) Tamarind

Answer:

1. -d
2. -a
3. -b
4. -e
5. -c

V. Assertion and Reason.

Mark the correct choice as
(a) Assertion is correct, Reasoning is correct
(b) Assertion is correct, Reasoning is incorrect
(c) Assertion is incorrect Reasoning is correct
(d) Assertion & Reasoning are incorrect

Question 1.
Assertion (A) : Angiosperms have ovary in the flower.
Reason (R) : They produce fruits and seeds.

Answer:
(a) Assertion is correct, Reasoning

Question 2.
Assertion (A) : Blue green algae are prokaryotes.
Reason (R) : They do not have a true nucleus.

Answer:
(a) Assertion is correct, Reasoning

Question 3.
Assertion (A) : Xylem does not have vessels in angiosperms.
Reason (R) : They conduct food.

Answer:
(d) Assertion & Reasoning is

Question 4.
Assertion (A) : Reptiles are warm blooded animals.
Reason (R) : They have scales.

Answer:
(c) Assertion is incorrect Reasoning is correct

VI. Give Very short Answers:

Question 1.
Name the following:

1. A phylum with diploblastic animals
2. A phylum which has hermaphrodite animal

Answer:

1. phylum coelenterata.
2. Phylum Annelida / Phylum Platyhelminthes.

Question 2.
Mention two features of phylum Echinodermata.

Answer:
Water vascular system, tube feet.

Question 3.
Mention two salient features of class mammalia.

Answer:
Viviparous animals, heterodont dentition.

Question 4.
What is heterodont dentition?

Answer:
Presence of different kinds of teeth.

Question 5.
Why do Aves have bones with air cavities?

Answer:
It makes the body lighter and helps in flight.

Question 6.
Name the vascular tissues seen in plants.

Answer:
Xylem and phloem.

Question 7.
Gymnosperms do not produce fruits. Give Reason.

Answer:
The ovules are naked, without ovary. Hence gymnosperms do not produce fruits.

VII. Short Answer.

Question 1.
List two demerits of five kingdom system of classification.

Answer:

1. In this system of classification, viruses have not been given a proper place
2. Multicellular organisms have originated several times from protists.

Question 2.
Write a note on kingdom fungi.

Answer:

1. Fungi are eukaryotic, and mostly are multicellular.
2. They secrete enzymes to digest the food and absorb the food after digested by the enzymes.
3. Fungi saprophytes as decomposes (decay-causing organisms) or as parasites.
4. Kingdom Fungi includes molds, mildews, mushrooms and yeast.

Question 3.
Differentiate Angiosperms and Gymnosperms.

Answer:
Angiosperms

1. They produce flowers.
2. They produce fruits.
3. They are classified into monocots and dicots.
4. They possess well developed xylem and phloem.

Gymnosperms

1. They produce cones.
2. Ovules are naked and no fruit formation occurs.
3. They are not classified.
4. Xylem lacks vessels and phloem lacks companion cells.

VIII. Give answer in Detail:

Question 1.
Write the merits and demerits of five kingdom classification.

Answer:
Merits:

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

Demerits:

1. 1.In this system of classification of viruses have not been given a proper place.
2. Multicellular organisms have originated several times from protists.
3. This type of classification has drawn back with reference to the lower forms of life.
4. Some organisms included under protista are not eukaryotic.

IX. Creative questions: HOTS

Question 1.
Blue green algae are not placed under kingdom protista whereas other algae are placed under it.

Answer:
Blue green algae has prokaryotic cells like bacteria. The cells lake a proper nucleus, therefore they are placed with bacteria in kingdom monera.

Question 2.
How can you differentiate a Prokaryotic cell from Eukaryotic cell.

Answer:
Prokaryotic
1. Presence of a true nucleus is eukaryotes ,
2. Eg. A nucleus which is covered by a nuclear membrane.

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