

Diversity in Living Organisms

1. OBJECTIVE QUESTIONS

1. Which of the following characteristics cannot be used in grouping and sub-grouping of organisms?

- Cells are prokaryotic or eukaryotic
 - Presence or absence of mitochondria
 - Number of cells in an organisms
 - Mode of nutrition
 - Level of organization in body
 - Organisms are nocturnal or diurnal
 - Organisms are oviparous or viviparous
- (a) 1, 3, 4 and 5 (b) 2, 6 and 7
(c) 3 and 7 (d) None of these

Ans : (d) None of these

All the given characteristics can be used for grouping and sub-grouping of organisms.

2. Find a prokaryote.

- (a) Chlorophyceae (b) Cyanophyceae
(c) Phaeophyceae (d) Rhodophyceae

Ans : (b) Cyanophyceae

Cyanophyceae is a prokaryote.

3. What is classification?

- (a) Grouping organisms together on the basis of the features they have in common.
(b) Grouping organisms together of the basis of how they respire.
(c) Grouping organisms together on the basis of how they feed.
(d) Grouping organisms together on the basis of how they survive.

Ans : (a) Grouping organisms together on the basis of the features they have in common.

Classification means identifying similarities and dissimilarities between different kinds of organisms and then placing organisms with similar characteristics in one group and different kinds of organisms in different groups.

4. Which of the following statements is incorrect?

- (a) Organisms with primitive body structure are lower organisms.
(b) Older organisms have simpler body structure.
(c) Younger organisms are relatively recent organisms in term of evolutionary time.
(d) Advanced organisms have more complex body structure.

Ans : (a) Organisms with primitive body structure are lower organisms.

When we connect the idea of evolution to classification, we will find some groups of organisms which have ancient body designs that have not changed very much. We will also find other groups of organisms that have acquired their particular body designs relatively recently. Those in the first group are frequently referred to as 'primitive' or 'lower' organisms, while those in the second group are called 'advanced' or 'higher' organisms. In reality, these terms are not quite correct since they do not properly relate to the differences. All that we can say is that some are 'older' organisms, while some are 'younger' organisms. Since there is a possibility that complexity in design will increase over evolutionary time, it may not be wrong to say that older organisms are simpler, while younger organisms are more complex.

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5. Choose the correct order for levels of taxa.

- (a) Phylum, class, order, kingdom, family, genus, species
(b) Species, class, order, family kingdom, phylum, genus
(c) Kingdom, family, genus, class, phylum order, species
(d) Kingdom, phylum, class, order, family, genus, species

Ans : (d) Kingdom, phylum, class, order, family, genus, species

6. Match the columns and select the correct option.

	Column I		Column II
A.	Phylogeny	1.	The evolutionary history of a species
B.	Biodiversity	2.	Identification, nomenclature and classification of organisms
C.	Taxonomy	3.	Different forms of living organisms

- (a) A-3, B-2, C-1 (b) A-1, B-3, C-2
(c) A-2, B-3, C-1 (d) A-3, B-1, C-2

Ans : (b) A-1, B-3, C-2

7. In which of the following groups, chlorophyll is not present?

- (a) Algae (b) Fungi
(c) Bryophyta (d) Pteridophyta

Ans : (b) Fungi

Fungi lack chlorophyll and live as saprophyte or

parasite.

8. The kingdom that includes unicellular, eukaryotic organisms is:

(a) Monera (b) Protista
(c) Plantae (d) Fungi

Ans : (b) Protista

Protista includes unicellular, eukaryotic organisms.

9. Which taxonomic category lies in between the genus and order in the hierarchical classification of plants?

(a) Species (b) Class
(c) Family (d) Kingdom

Ans : (c) Family

In a taxonomical hierarchy, the sequence of categories in plants is:

Species → Genus → Family → Order → Class → Division → Kingdom.

10. In which kingdom would you expect to find an eukaryote deriving its nutrition from decaying organisms.

(a) Animalia (b) Plantae
(c) Fungi (d) Monera

Ans : (c) Fungi

Fungi derive its nutrition from decaying organisms.

11. The most primitive vascular plants are

(a) Cycas (b) ferns
(c) moss (d) brown algae

Ans : (b) ferns

Pteridophytes (e.g., ferns) are the first (most primitive) terrestrial, vascular plants. They have a well-differentiated body, comprising of roots, stem and leaves. They mainly inhabit shady and damp places.

12. Bacteria and cyanobacteria are included in the kingdom

(a) Animalia (b) Fungi
(c) Protista (d) Monera

Ans : (d) Monera

Bacteria and cyanobacteria are included in the kingdom monera.

13. True roots are absent in

(a) bryophytes (b) pteridophytes
(c) gymnosperms (d) angiosperms

Ans : (a) bryophytes

True roots are absent in bryophytes. In place of roots, they have unicellular or multicellular rhizoids for absorption of nutrients and water.

14. The group of plants that bear naked seeds is

(a) Gymnosperms (b) Angiosperms
(c) Bryophytes (d) Pteridophytes

Ans : (a) Gymnosperms

In gymnosperms, the ovules are not enclosed within the ovaries, so they are naked. After fertilization, the ovules become seeds. Thus, the seeds are naked and are not enclosed inside the fruits.

15. Characteristic features of a plant “P” are given below, read them carefully and choose the correct option.

i. Plant ‘P’ produces flowers
ii. Leaves of plant ‘P’ show parallel venation.
(a) Plant ‘P’ has fibrous roots
(b) Plant ‘P’ has a woody stem
(c) Plants ‘P’ has white coloured flowers
(d) Plant ‘P’ has seeds with two cotyledons

Ans : (a) Plant ‘P’ has fibrous roots

Plant P is a monocot and it has fibrous roots.

16. Related phyla are grouped together to form

(a) order (b) genus
(c) kingdom (d) family

Ans : (c) kingdom

Phyla are grouped together to form kingdom.

17. Which group of animals are called ‘flatworms’?

(a) Platyhelminthes (b) Porifera
(c) Coelenterata (d) Nematoda

Ans : (a) Platyhelminthes

Platyhelminthes (Gr., platys = flat; helminthes = worm) are bilaterally symmetrical, elongated, dorsoventally flattened animals, commonly called flatworms.

18. Which of the following represent the lowermost category in the taxonomic hierarchy?

(a) Genus (b) Species
(c) Order (d) Phylum

Ans : (b) Species

Species is the basic unit in understanding the taxonomic hierarchy.

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19. Which of the following is a chordate feature not shared by the non-chordates?

(a) Pharyngeal gill slits
(b) Bilateral symmetry
(c) Metamerism
(d) Tissue level organization

Ans : (a) Pharyngeal gill slits

20. Which is the subgroup?

(a) Arthropod (b) Insect
(c) Invertebrate (d) Arachnid

Ans : (d) Arachnid

Arachnid is the subgroup.

21. Select the descending order of nomenclature.

(a) Kingdom-division-class-order-genus-species
(b) Kingdom-class-order-phylum-species-genus
(c) Kingdom-phylum-class-order-family-genus-species
(d) Kingdom-phylum-order-class-genus-species

Ans : (c) Kingdom-phylum-class-order-family-genus-species

22. What is meant by biodiversity?

(a) A large population of animals in a habitat

- (b) A large population of plants in a habitat
- (c) A large variety of living things
- (d) An interactions between plants and animals

Ans : (c) A large variety of living things
A large variety of living things is called biodiversity.

23. What is the role of biodiversity?
- (a) Providing work for human beings
 - (b) Maintaining the balance in nature
 - (c) Creating different types of climate
 - (d) Providing a subject for scientists to investigate

Ans : (b) Maintaining the balance in nature
Maintaining the balance in nature is the role of biodiversity.

24. Find the correct statement.
- (a) Two parts of binomial nomenclature are generic and trivial names.
 - (b) Generic = genus, trivial names = specific, should precede by generic name.
 - (c) Genus name is capitalized, species name is not
 - (d) All of the above

Ans : (d) All of the above
All the given statements are correct.

25. Diploblastic, aquatic animals with tissue grade of organization belong to the phylum
- (a) Protozoa
 - (b) Porifera
 - (c) Cnidaria
 - (d) Helminthes

Ans : (c) Cnidaria
Members of phylum Cnidaria or Coelenterata are diploblastic, aquatic animals with tissue grade of organization. Body contains a large cavity called coelenteron or gastrovascular cavity. Coelenteron has a single opening for ingestion and egestion.

26. What is the generic name of mango?
- (a) Magnifera indica
 - (b) Helminthosporium oryzae
 - (c) Solanum tuberosum
 - (d) Lycopersicon esculentum

Ans : (a) Magnifera indica
The generic name of mango is Mangifera Indica.

27. Which of the following is not a chondrichthyes?
- (a) Scoliodon
 - (b) Sting ray
 - (c) Hippocampus
 - (d) Torpedo

Ans : (c) Hippocampus
Hippocampus (sea horse) is a osteichthyes.

28. Identify the pictures given below.



- (a) Bryophytes
- (b) Algae

- (c) Pteridophytes
- (d) Fungi

Ans : (d) Fungi
Yeast, toadstools and mucor are fungi

29. Water vascular system is a distinctive feature of
- (a) Echinodermata
 - (b) Annelida
 - (c) Chordata
 - (d) Mollusca

Ans : (a) Echinodermata
Water vascular system is a distinctive feature of Echinodermata. They are exclusively marine with pentamerous radial symmetry. They have true enterocoelic coelom and tube feet the locomotion.

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30. Why is the animal shown below not classified as an insect?



- (a) It does not have six legs
- (b) It has two body parts
- (c) It feeds on insects
- (d) Both (a) and (b)

Ans : (d) Both (a) and (b)
The animal shown below not classified as an insect as it does not have six legs, and it has two body parts.

31. What is the purpose of classifying organisms?
- (a) Classification facilitates the identification.
 - (b) By studying a few-organisms, the characteristics of the whole group can be known.
 - (c) Classification helps to establish the relationship among various groups of organisms.
 - (d) All of these

Ans : (d) All of these

32. Binomial Nomenclature includes
- (a) only species name
 - (b) both genus and species name
 - (c) only genus name
 - (d) both genus and family name

Ans : (b) both genus and species name
Binomial Nomenclature includes both genus and species name.

33. Unicellular eukaryotic organisms are included in
- (a) Monera
 - (b) Protista
 - (c) Fungi
 - (d) Plantae

Ans : (b) Protista

34. Which of the following is a main plant body of pteridophytes?
- (a) Sporophyte
 - (b) Epiphyte
 - (c) Saprophyte
 - (d) Gametophyte

Ans : (a) Sporophyte
Main plant body of pteridophytes is called sporophyte.

35. Organism that does not have a defined nucleus and live in symbiotic relationship with fungi. It belongs

to kingdom

- (a) Protista (b) Monera
(c) Fungi (d) Plantae

Ans : (b) Monera

Organisms without nucleus and cell organelles belong to Kingdom Monera. It includes cyanobacteria (blue-green algae), eubacteria and archaebacteria. Cyanobacteria or blue-green algae live in symbiotic relationship with fungi and form the group known as lichen.

36. Vascular and mechanical tissue is absent in
(a) Bryophyta (b) Pteridophyta
(c) Gymnosperms (d) Angiosperms

Ans : (a) Bryophyta

Bryophytes do not have conducting or vascular tissues, i.e., xylem and phloem. Thus, they are called non-vascular cryptogamic plants. Bryophytes are very small in length (usually 2 cm to 15 cm) so they do not need mechanical tissues.

37. In which kingdom would you find unicellular prokaryotes.
(a) Animalia (b) Plantae
(c) Fungi (d) Monera

Ans : (d) Monera

Unicellular prokaryotes are found in monera.

38. In which of the following groups, would you place a plant which produces spores and embryos but lacks seeds and vascular tissues?
(a) Fungi (b) Pteridophytes
(c) Bryophytes (d) Gymnosperms

Ans : (c) Bryophytes

Bryophytes is the plant group which lacks vascular tissue and seed (as ovule is absent) but have embryos and spore. Spores are haploid and produce gametophyte.

39. Which of the following is a plant that produce seeds but not fruits?
(a) Fungi (b) Bryophytes
(c) Pteridophytes (d) Gymnosperms

Ans : (c) Pteridophytes

Gymnosperms produce seeds but not fruits.

2. FILL IN THE BLANK

1. Tube feet are found in phylum

Ans : Echinodermata

2. Blood fluke belongs to the phylum

Ans : Platyhelminthes

3. proposed protista.

Ans : Ernst Haeckel

4. is the basic unit of classification.

Ans : Species

5. The binomial nomenclature is made up of two words a name and a name.

Ans : Genus, Species

6. Animals with jointed legs are included in phylum

Ans : Arthropoda

7. Bacteria, blue-green algae are included in the kingdom

Ans : Monera

8. In birds are modified to form a strong beak.

Ans : Jaws

9. are considered as amphibians of plant kingdom.

Ans : Bryophytes

10. Triploblastic, acoelomate and bilaterally symmetrical animals are placed in

Ans : Platyhelminthes

11. are also called vascular cryptogams.

Ans : Pteridophytes

12. proposed the five kingdom classification.

Ans : Whittaker

13. A sea anemone belong to the phylum

Ans : Hemichordata

14. are plants with naked seeds.

Ans : Gymnosperms

3. TRUE/FALSE

1. Sponges have a nervous system.

Ans : False

Sponges do not have a nervous system.

2. Animals store carbohydrate as glycogen.

Ans : True

3. The binomial nomenclature is an uniform way of identifying vast diversity of life around us.

Ans : True

4. Lichens are examples of liverworts.

Ans : False

Lichens are examples of a fungus and an alga.

5. Conifers are angiosperms.

Ans : False

Conifers are gymnosperms.

6. Hornworts and liverworts are pteridophytes.

Ans : False

Hornworts and liverworts are bryophytes.

7. The kingdom Animalia includes single-celled and multicellular organisms.

Ans : True

8. Mosses have a vascular system.

Ans : False

Mosses are non-vascular plants in division bryophyta.

9. The algae are vascular system.

Ans : False

The algae are diverse group of aquatic plants that are autotrophs.

10. Ferns are seedless plants.

Ans : True

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4. MATCHING QUESTIONS

DIRECTION : Each question contains statements given in two columns which have to be matched. Statements (A, B, C, D) in column-I have to be matched with statements (p, q, r, s) in column II.

1.

Column I		Column II	
(A)	Marsilea	(p)	Angiosperms
(B)	Penicillium	(q)	Gymnosperms
(C)	Flagella	(r)	Pteridophyta
(D)	Naked seed	(s)	Bryophyta
(E)	Covered seed	(t)	Thallophyta
(F)	Cladophora	(u)	Fungi
(G)	Marchantia	(u)	Euglena

	A	B	C	D	E	F	G
(a)	r	u	v	q	p	t	s
(b)	p	v	q	u	r	t	s
(c)	t	u	p	q	r	s	v
(d)	r	u	v	q	p	s	t

Ans : (a) A-r, B-u, C-v, D-q, E-p, F-t, G-s

2.

Column I		Column II	
(A)	Algae	(p)	Chlamydomonas
(B)	Fungi	(q)	Rosa indica
(C)	Angiosperm	(r)	Adiantum
(D)	Pteridophyte	(s)	Rhizopus

	A	B	C	D
(a)	q	r	s	p
(b)	p	s	q	r
(c)	q	p	s	r
(d)	r	p	q	s

Ans : (b) A-p, B-s, C-q, D-r

3.

Column I		Column II	
(A)	Theophrastus	(p)	New systematics
(B)	J. Huxley	(q)	Systematics
(C)	Carolus Linnaeus	(r)	Father of Botany
(D)	Lamarck	(s)	Dynamic concept of species

	A	B	C	D
(a)	q	r	s	p
(b)	p	s	q	r
(c)	q	p	s	r
(d)	r	p	q	s

Ans : (d) A-r, B-p, C-q, D-s

4.

Column I		Column II	
(A)	Sea anemone	(p)	Annelida
(B)	Roundworm	(q)	Cnidaria
(C)	Tapeworm	(r)	Nematoda
(D)	Clamworm	(s)	Platyhelminthes

	A	B	C	D
(a)	q	r	s	p
(b)	p	s	q	r
(c)	q	p	s	r
(d)	r	p	q	s

Ans : (a) A-q, B-r, C-s, D-p

5.

Column I		Column II	
(A)	Jointed legs	(p)	Mollusca
(B)	Soft bodied animals	(q)	Echinodermata
(C)	Diploblastic	(r)	Arthropoda
(D)	Spiny skinned animals	(s)	Coelenterata
(E)	Pore bearing animals	(t)	Annelida
(F)	Metamerism	(u)	Porifera

	A	B	C	D	E	F
(a)	q	r	t	u	p	s
(b)	p	q	r	s	t	u
(c)	r	p	s	q	u	t
(d)	u	p	q	r	s	t

Ans : (c) A-r, B-p, C-s, D-q, E-u, F-t

5. ASSERTION AND REASON

DIRECTION : In each of the following questions, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as

- Both assertion and reason are true and reason is the correct explanation of assertion.
- Both assertion and reason are true but reason is not the correct explanation of assertion.
- Assertion is true but reason is false.
- Both Assertion and Reason are false.

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- Assertion :** Classification helps us in exploring the diversity of life forms.

Reason : Classification helps to establish the relationship among various groups of organisms.

Ans : (b) Both assertion and reason are true but reason is not the correct explanation of assertion.

- Assertion :** The process of classification is based on certain characters to divide organisms into broad groups.

Reason : Cells occur singly or in clusters is the basic characteristic of classification.

Ans : (c) Assertion is true but reason is false. The primary or basic characteristic used for making the broadest division of organisms is “Whether the organisms are prokaryotic or eukaryotic”.

- Assertion :** Members of species possess maximum characteristics in common.

Reason : Species is the basic unit of classification.

Ans : (b) Both assertion and reason are true but reason is not the correct explanation of assertion.

Species which lie at the bottom of the taxonomic ladder bear the smallest number of organisms and since the members of a species can interbreed among themselves, they possess maximum characteristics in common.

- Assertion :** Bryophytes are called amphibians of plant kingdom.

Reason : In bryophytes, water is required for fertilization.

Ans : (a) Both assertion and reason are true and reason is the correct explanation of assertion.

- Assertion :** Seeds are enclosed within fruits in

gymnosperms.

Reason : Ovules are enclosed within ovary in gymnosperms.

Ans : (d) Both Assertion and Reason are false.

In gymnosperms, ovules are not enclosed in ovary. So, after fertilization, when the ovules become seeds and ovary becomes fruit, the seeds are naked and not enclosed inside the fruits.

- Assertion :** Platyhelminthes are commonly called flatworms.

Reason : Plathelminthes are elongated, dorsoventrally flattened animals.

Ans : (a) Both assertion and reason are true and reason is the correct explanation of assertion.

- Assertion :** Tube feet are characteristic organs of Echinodermata.

Reason : Tube feet plays an important role in reproduction.

Ans : (c) Assertion is true but reason is false. Tube feet are characteristic organs of echinoderms which help in locomotion, capturing of food, respiration, etc.

- Assertion :** Arthropods have an open type of circulatory system.

Reason : In Arthropods, blood flows in haemocoel (body cavity) instead of blood vessels.

Ans : (a) Both assertion and reason are true and reason is the correct explanation of assertion.

In arthropods, there is an open circulatory system and so the blood does not flow in well defined blood vessels. Instead it flows in haemocoel (coelomic cavity).

- Assertion :** Fish are cold-blooded animals.

Reason : Fish hearts have two auricles and two ventricles.

Ans : (c) Assertion is true but reason is false. Fish are cold-blooded animals and their hearts have only two chambers-one auricle and one ventricle.

- Assertion :** Organisms are named according to binomial nomenclature.

Reason : Names consist of two words-one scientific and other vernacular.

Ans : (c) Assertion is true but reason is false.

Binomial nomenclature is the system of providing organisms with appropriate and distinct names consisting of two names, first generic and second specific. The first or generic name is also called genus. The second or specific name represents the species, for example Homo sapiens is the scientific name for human beings. Here, Homo is the generic name and sapiens is the specific name.

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