Grade IX

Lesson : 7 **DIVERSITY IN LIVING ORGANISMS (CHAPTER AT A GLANCE)**

BIODIVERSITY

Millions of different life forms found on earth constitute the biodiversity

CLASSIFICATION

Grouping of organisms based on certain easily observable characteristics

NEED OF CLASSIFICATION

It is almost impossible to study the different life forms one by one. So these are grouped into different categories based on certain similarities

HIERARCHY OF CLASSIFICATION

Kingdom

- Highest category of taxonomic study

PHYLUM / DIVISION

- Many classes with some specific common characters are included. Term phylum is used for animals and division for plants

Class

- Similar orders are placed together in a class

Order

- Families having common characters are placed in an order

Family

- Genera having several common characters form a family

GENUS

Group of closely related species

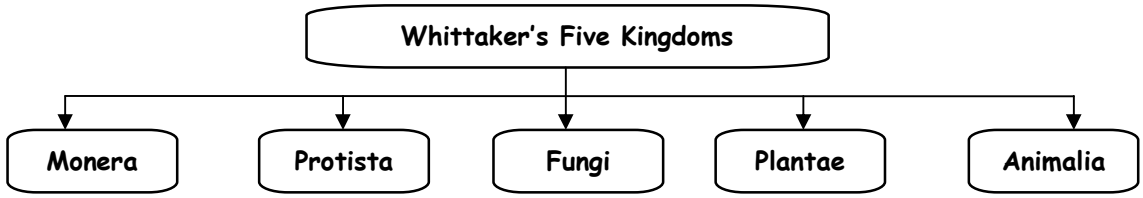
Species

- Group of organisms capable of interbreeding to produce fertile offspring. It is the basic unit of classification

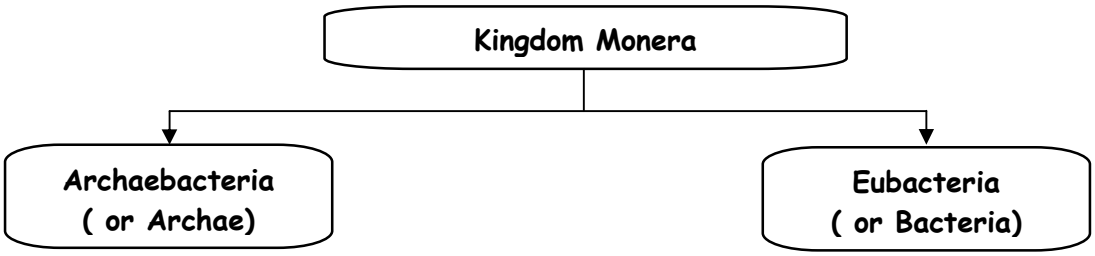
Aristotle for the first time classified living organisms on the basis of their habitat. But it was not an appropriate way of classification

SYSTEMS OF CLASSIFICATION

♣ Robert Whittaker (1959) proposed five kingdom classification



♣ Modifications by Carl Woese (1977) in Whittaker's classification system



RELATION BETWEEN CLASSIFICATION AND EVOLUTION

- Lower or ancient organisms have simple body design, whereas higher or advanced organisms have complex body design. Charles Darwin (1859)

ORGANISM

Prokaryotes

- Unicellular
- Do not have well defined nucleus and lack cell organelles

Kingdom Monera

- Prokaryotic : some with cell walls and others without cell wall; mode of nutrition either autotrophic or heterotrophic
- e.g. bacteria, cyanobacteria, mycoplasma, etc.

Eukaryotes

- Have well defined nucleus and cell organelles are present

Unicellular

Kingdom protista

- Unicellular eukaryotic; mode of nutrition is either autotrophic or heterotrophic; movement is either by pseudopodia or cilia or flagella
- e.g. algae (unicellular), diatoms, protozoans (Amoeba, Paramoecium, Euglena)

Multicellular

Cell wall present

Plant body not differentiated

Kingdom Fungi

- Eukaryotic ; non-green ; saprophytic; cell wall made up of chitin
- Symbiotic association: Mutually dependant relationship between fungi and cyanobacteria (or blue green

Plant body not differentiated

Kingdom Plantae

Multicellular, eukaryotes with cellulosic cell wall; autotrophic

Plant body not differentiated

Division Thallophyyta

- Commonly called algae and are permanently aquatic
- Inconspicuous reproductive organs are found
- e.g. Spirogyra, Ulothrix Chara, etc

Differentiated plant body

Specialized vascular tissue absent

Specialized vascular tissue present

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Division Bryophyta (called amphibians of plant kingdom as they require water for completing their life cycles

- Plant body is differentiated into stem, leaf-like structures and root-like structures (called rhizoids)
- In conspicuous reproductive organs are found
- E,g, Riccia, Marchantia, Funaria (moss) etc.

Cell wall absent

Kingdom Animalia

Multicellular eukaryotic without cell wall having heterotrophic mode of nutrition

Cellular level of organization

Phylum porifera
(or pore bearing animals or sponges

- Eukaryotic ; non-green ; saprophytic; cell wall made up of chitin
- Symbiotic association: Mutually dependant relationship between fungi and cyanobacteria (or blue green algae

** Tissue level of organisation

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Specialized vascular tissue present

Do not produce seeds

Division Pteridophyta

- Plant body is differentiated into roots, stems and leaves
- Have specialized tissue for conduction of water and other substances
- Inconspicuous reproductive organs are found

Produce seeds

Phanerogams

Division Gymnosperm

- Naked seeded plants
- Normally evergreen and woody
- Reproductive organs generally form cones or strobilus
- E.g. Pinus, Cycas

Division Angiosperm

- Seed bearing plants. Seed has structure called cotyledon (or 'seed leaf', Embryo (or future plant) is enclosed inside the seed.

Monocotyledonous

- Plants with seeds having single cotyledon, e.g. wheat rice, maize

Dicotyledonous

- Plants with seeds bearing two cotyledon, e.g. pea, gram, beans etc

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**Tissue level of organisation

No body cavity between epidermis and gastrodermis

Pseudocoelom

Coelomate

Phylum coelenterate / cnidaria

- Lives in water with more body differentiation than sponges.
- Have sac-like body cavity with single opening for ingestion and egestion
- Have two layers of cells – one layer on outside the body and the other for inner lining of the body
- Some lives in colonies while others have solitary life span e.g.Hydra, Aurelia, etc.

Phylum Platyhelminthes

- Mostly parasitic animals. They can be free – living
- First triploblastic animals
- Body design more complex than animals in porifera and coelenterate
- Body is bilaterally symmetrical without body cavity
- Dorsiventrally flattened body, so commonly called flatworms e.g. Planaria (free – living) liver fluke (Parasitic)

Phylum Nematoda

- Bilaterally symmetrical and triploblastic animals
- Have elongated, narrow and cylindrical body
- Have tissues but real organs are absent
- Body cavity is not a true coelom
- Have complete and straight alimentary canal.
- E.g. Filarial worm (Wuchereria) cause elephantiasis, round worm (Ascaris) cause ascariasis

Codlom formed from mesodermal cells during embryonal growth

*** Coelom formed from pouches pinched off from the endoderm

Phylum Annelida

- Found in fresh water, marine water and on land
- Bilaterally symmetrical and triploblastic
- Have true body cavity (or coelom)
- Segmented body with organ differentiation
- e.g. Earthworm, Nereis, leech, etc

Phylum Mollusca

- Mostly aquatic, lives in both sea water and fresh water
- Soft body is supported by a hard shell
- Coelomic, cavity is reduced
- There is little segmentation
- Body is divided into an anterior head, a ventral muscular foot and a dorsal visceral mass, e.g. Octopus, pila etc.,

Phylum Arthropoda

- Larget group of animals
- Body is divided into head thorax and abdomen
- Jointed legs and a pair of compound eyes up.
- Body is bilaterally symmetrical e.g. housefly, scorpion, crab, spider, etc.

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***** Coelom formed from pouches pinched off from the endoderm**

Notochord absent

Phylum Echinodermata

- Triploblastic body with a coelomic cavity
- Have water driven tube system which they use to move around
- Have a hard skeleton of calcium carbonate
- Have radial symmetry in adults and bilateral in larvae
- There is no head or tail
- E.g. Asteria (star fish), Echinus (sea Urchin) etc.

Notochord present

Phylum Chordata

Notochord present in level forms but very rudimentary

Protochordata

- Exclusively marine, triploblastic and coelomate
- Bilaterally symmetrical
- Notochord present at some stage of life

e.g. Herdmania, Balanoglossus, etc

Notochord replaced by vertebral column in adults

Vertebrate

- Most advanced group of animals
- Body is bilaterally symmetrical and are triploblastic
- Have true vertebral column and internal skeleton
- Have complex differentiation of body tissues and organs

6 classes

Cyclostama

- Cold blooded aquatic animals
- Body is elongated, eel like
- Can live in both salt as well as fresh water
- Body is free from scate and has soft, smooth and slimy skin
- Have 2 chambered heart
- Respiration is through gills present in sac-like pouches of pharynx
- Mouth is circular, suctorial and without jaws
- Digestive tract lacks stomach
- For example Lamprey (Petromyzon), has fish (Myxine)

Pisces

- Cold-blooded animals
- Aquatic animals
- Body is covered with scales
- Body is streamlined
- Fins are present but limits are absent
- Muscular tail is present for movement
- Respiration is through gills
- Have 2 chambered heart
- Lay eggs

e.g. Electric ray, Scoliodon

Amphibia

- Can live both in water
- Have mucus glands in the skin
- Respiration through gills or lungs
- Heart is 3 chambered
- Lay eggs
- Have distinctive head neck and trunk
- Limbs are tetrapodous and pentadactyl

e.g. Frog, toad, salamander etc.

Reptilia

- Cold blooded
- Body is divided into head neck , trunk and tail.
- Have 2 pairs of pentadactyl limbs, but limbs are reduced of absent in snakes
- Body is covered with scales.
- Respiration is through lungs
- Have 3 chambered heart except crocodile which has 4 chambered heart except crocodile which has 4 chambered heart
- Lay eggs

e.g. Snakes, lizards, turtles

Aves

- Warm blooded animals
- Body is covered with feathers
- Forelimbs are modified into wings that aids in flight
- Body is divided into head neck , trunk and tail.
- Heart is 4 chambered
- Lay eggs
- 2 forelimbs are modified to wings
- Breathing through lungs
- Bones have air cavities that make their body light
- Jaws are modified into strong beak
- E.g. Sparrow, crow, duck

Mammalia

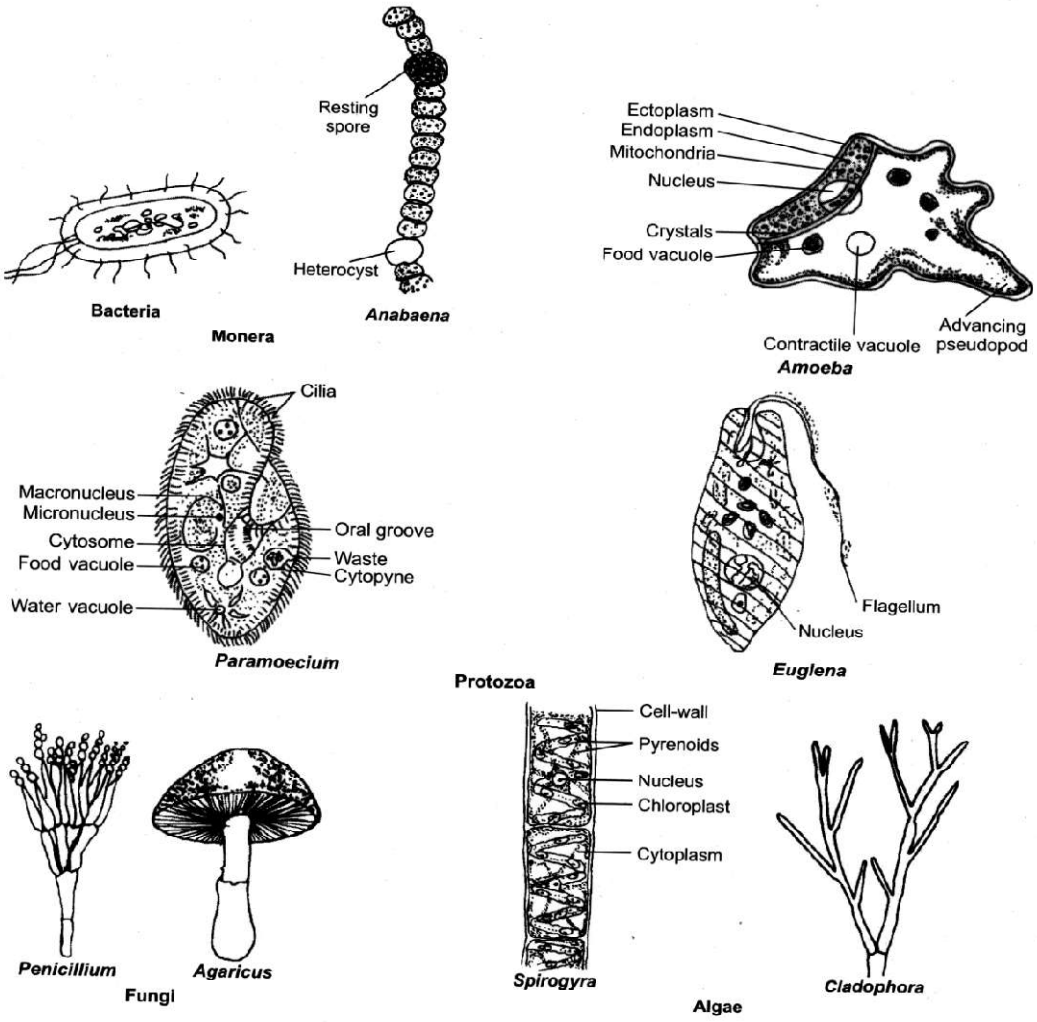
- Warm blooded animal
- Have 4 chambered heart
- Have mammary glands
- Skin has hair as well as sweat and oil glands
- Give birth to young ones
- Have 2 pairs of pentadactyl limbs
- Eyes have two movable eyelids
- Respiration through lungs

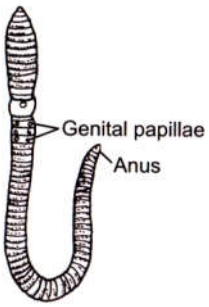
NOMENCLATURE (OR SCIENTIFIC NAMING)

- Introduced by Carolus Linnaeus
- Scientific name is unique for an organism that can be identified anywhere in the world
- Scientific name (Genus + Species)
- Certain conventions for writing scientific name.
  __ When printed genus and species are give in italic
  __ When hand written, genus and species are underlined
  __ When Name of genus begins with a capital letter and the species name begins with a small letter

True Coelom: Coelom Completely derived from mesodermal cells.
Notochord: A rod-like cartilaginous structure that provides support to the body.

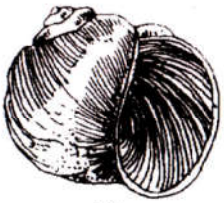
IMPORTANT DIAGRAMS





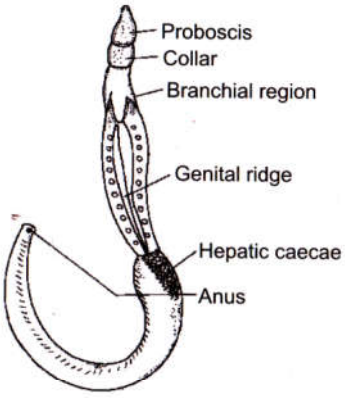
Earthworm
Annelida

Musca
(*Housefly*)
Arthropoda

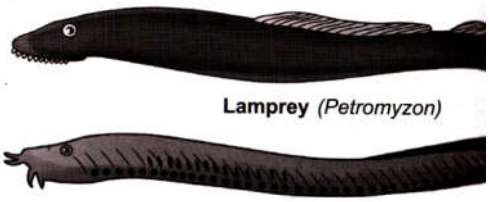


Pila
Mollusca

Asterias
Echinodermata



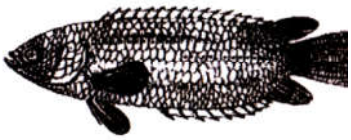
Balanoglossus
Protochordata



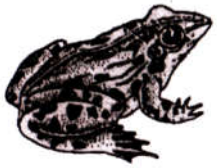
Lamprey *(Petromyzon)*

Hag fish *(Myxine)*

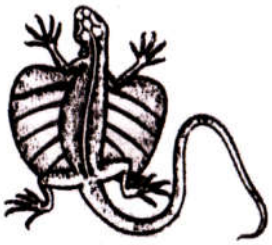
Cyclostomata



Anabas (*Climbing perch*)
Pisces

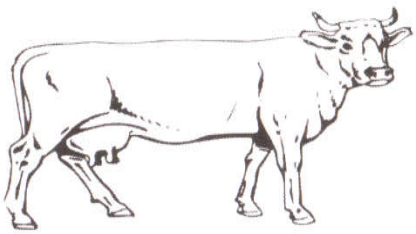


Rana tigrina (*Common frog*)
Amphibia



Flying lizard (*Draco*)
Reptilia

Pigeon
Aves (Birds)



Mammalia Cow

Objective Type Questions

I. Multiple choice questions

1. A group of fresh interbreeding organisms constitute a

a) family b) genus c) species d) class

2. Binomial system of nomenclature means that every organism has :

a) a name given by two scientist

b) One scientific name consisting of a generic name and a specific name and a specific name.

c) One scientific name and one popular name

d) a number in an international catalogue by which an organism is identified

3. All the plants, animals and protists living in a forest make up a

a) phylum b) population c) species d) community

4. In Whittaker's classification, unicellular eukaryotic organisms are grouped under

a) Protozoa b) Porifera c) Fungi d) Protista

5. In a taxonomic hierarchy, as one goes from Species to Kingdom the number of common characteristics.

a) will increase b) will decrease

c) may increase or decrease d) remains same

6. The correct order of the biological hierarchy from Kingdom to Species is

a) Kingdom, Phylum, Order, Family, Class, Genus, Species

b) Kingdom, Phylum, Class, Order, Family, Genus, Species

c) Kingdom, Class, Family, Order, Phylum, Genus, Species

d) Kingdom, Class, Order, Phylum, Family, Genus, Species

7. The scientific name of an organism

a) may refer to more than one species

b) may have more than one genus

c) varies according to the native language of scientists

d) is the same for scientists all over the world

8. The taxonomic unit 'Phylum' in the classification of animals is equivalent to which hierarchical level in classification of plants.

a) Class b) Family c) Order d) Division

9. Members of which of the following kingdoms are single cells with considerable internal complexity?

a) Monera b) Animalia c) Planatae d) Protista

10. The broadest category of organism in biological taxonomy is

a) Class b) Phylum c) Kingdom d) Family

11. Which is the biggest plant group in the Plant Kingdom?

a) Angiosperms b) Gymnosperms c) Ferns d) Moss

12. A plant is diploid and well adapted to extreme conditions. They grow bearing sporophylls in compact structures called cones. Identify the group to which it belongs.

a) Pteridophyta b) Angiosperms c) Gymnosperms d) Bryophyta.

13. Amoeba, Paramoecium are examples of organisms from which kingdom?

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

14. Kingdom Fungi are

a) Prokaryotic, unicellular b) Prokaryotic, multicellular

c) Eukaryotic, unicellular d) Eukaryotic, multicellular

15. Monocots and Dicots are the features of

a) Angiosperms b) Gymnosperms

c) Pteridophytes d) Bryophytes

16. Identify a member of Porifera [NCERT Exemplar Problem]

a) Spongilla b) Euglena c) Penicillium D) Hydra

17. Amphibians do not have the following [NCERT Exemplar Problem]

a) Three chambered heart b) Gills or lungs

c) Scales d) Mucus glands

18. Organisms without nucleus and cell organelles [NCERT Exemplar Probles]

a) Fungi b) Protista c) Cyanobacteria d) Archaebacteria

19. The feature that is not a characteristic of protochordata.

a) Presence of notochord b) Bilateral symmetry and coelom

c) Jointed legs d) Presence of circulatory system

20. The locomotory organs of Echinodermata are [NCERT Exemplar Probles]

a) Tube feet b) muscular feet c) jointed legs d) parapodia

21. Corals are [NCERT Exemplar Problem]

a) Poriferans attached to some solid support

b) Cnidarians, that are solitary living

c) Poriferans present at the sea bed d) Cnidarians that live in colonies

22. Who introduced the system of scientific nomenclature of organisms?
[NCERT Exemplar Problems]

a) Robert Whittaker b) Carolus Linnaeus

c) Robert Hooke d) Ernst Haeckel

23. Two chambered heart occurs in [NCERT Exemplar Problems]

a) Crocodiles b) Fish c) Aves d) amphibians

24. Skeleton is made entirely of cartilage in [NCERT Exemplar Problems]

a) Sharks b) Tuna c) Rohu d) None of these

25. Real organs are absent in
[NCERT Exemplar Problems]

a) Mollusca b) Coelenterata c) Arthropoda d) Echinodermata

26. Hard calcium carbonate structures are used as skeleton [NCERT Exemplar Problems]

a) Echinodermata b) Protochordata c) Arthropoda d) Nematoda

27. Five kingdom classification was given by [NCERT Exemplar Problems]

a) Morgan b) R. Whittaker c) Linnaeus d) Haeckel

1. c	2. b	3.d	4. d	5. b	6. b	7. d	8. d	9. a	10. c
11. a	12. c	13. c	14. d	15. a	16. a	17. c	18. d	19. c	20. a
21. d	22. b	23. b	24. a	25. b	26. a	27. b			

28.

I. Match the columns

Column I	Column II
1. Family	A. Tuberosum
2. Kingdom	B. Solanum
3. Species	C. Plantae
4. Genus	D. solanaceae

1. D	2. C	3. A	4. B

I. FILL IN THE BLANKS

29. Birds and mammals are _____ blooded.

30. _____ is a part of embryo within the seed of a plant

31. Gymnospermic plants bear _____ seeds

32. The largest phylum of animal kingdom is _____ system for water to flow through them.

33. Sponges have characteristic _____ system for water to flow through them.

29. warm	30. Cotyledon	31. naked	32. Arthropoda	33. canal

I. TRUE OR FALSE

34. Sexes are separate in Echinoderms

35. Nematodes are diploblastic

36. Body cavity is absent in annelids

37. Tentacles are present in Hydra

34. True	35. False	36. False	37. True

Direction [Q.38 to Q.40] : In the following Questions, the Assertion and Reason have been put forward. Read the statements carefully and choose the correct alternative from the following.

a. Bothe the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

b. The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertions.

c. Assertion is true but the Reason is false.

d. The statement of the Assertion is false but the Reason is true.

38. **Assertion:** Bryophytes are also called the amphibians of the plant kingdom.

Reason: Bryophytes can grow in both soil and water

39. **Assertion:** Mosses prevent soil erosion

Reason: Mosses form dense mats on the soil which prevent the impact of the falling rains.

40. **Assertion:** Plants with will differentiated reproductive tissue that make seeds are called cryptogamae.

Reason: Angiosperms are divided into two groups, monocots and dicots

41. Name an organism which is called saprotrophs. Why that is called so? [CBSE 2014]

Fungi is a saprotroph. It is called saprotroph because it takes nutrients from dead and decaying matter.

42. Where are seeds of gymnosperms formed? [CBSE 2015]

Seeds of gymnosperms are naked.

43. Rewrite the scientific names correctly: [CBSE 2012]

a) panthera tigris **b) periplaneta Americana**

a) Panthera tigris b) Periplaneta americana

44. Name the term which is used for the following [CBSE 2012]

a. The left and right halves of the body have the same design.

b. The animal tissue differentiate from the three embryonic germs layers.

45. Which in your opinion is more basic characteristic for classifying organism the place where they live in or the kind of cells they are made of? [CBSE 2012]

The kind of cells they are made of is more basic characteristic for classifying organism.

46. What is the role of "International Code of Binomial Nomenclature"?

It sets the rules and guidelines for the binomial nomenclature.

47. Name the group in which related genera are placed.

Family

48. Give the technical terms of naming animals and plants with two words. i.e., one generic and other specific.

Binomial Nomenclature

49. State the phylum to which centipede and prawn belong [CBSE 2012]

Centipede and prawn belong to phylum Arthropoda.

50. Name the phylum in which the animals have water vascular system

Echinodermata

51. Name the seven basic hierarchical categories.

Kingdom, Phylum (animals) or Division (Plants), Class, Order, Family, Genus and Species.

52. Define pseudocoel.

A false body cavity between body wall and gut, e.g., in roundworms

53. What is tube-within-a tube plan?

When an animal has a complete gut and has mouth for intaking the food and anus for expelling of faces is called tube-within-a-tube plan.

54. Which organisms are included in Kingdom Protista?

Unicellular eukaryotic organisms

55. Give the habitat and economic importance of Taenia solium

Taenia solium is an endoparasite of intestine of man and causes taeniasis disease in man.

56. To which division of Cryptogams do algae belong?

Thallophyta

57. Write one specific feature of thallophyta plant.

The body of thallophyta plant is not differentiated into stem, root and leaves

58. Which division of plants is called the amphibians of the plant kingdom?

Bryophyta

59. Why is Euglena called plant-animal?

Euglena has certain plant characters like having chloroplasts and certain animal characters like having flagellum, eye-spot. Etc.,

60. Why amphibians are always present close to the water bodies?

Most amphibians lay their eggs in water or in moist location on land so they are always present close to the water bodies.

61. Which is the largest phylum of animal kingdom?

Anthropoda

62. To which phylum do sponges belong?

Phylum – Porifera

63. The animals belonging to a phylum have segmented body. Name the phylum

Phylum – Annelida,

64. What is the most important feature of Arthropoda?

Arthropods possess jointed legs.

65. What are cyclostomata?

Cyclostomata are group of jawless fishes which have round mouth but lacks jaws. They belong to phylum chordate and sub-phylum agnatha

66. Which organisms are included in Arthropods?

Prawn, all insects, spider, scorpion, crab, etc.

67. Which type of animals are included in Mollusca?

Animals which possess soft body are included in Mollusca.

68. Why is octopus so called?

Octopus possesses eight arms, that is why it is so called

69. From where do the term echinoderms originate?

In Greek , Echino means spines and Derma means skin.

70. Why are mammals so called?

They posses mammary glands

71. Name one aquatic mammal and one egg-laying mammal.

Aquatic mammal - Blue Whale

Egg laying mammal - Duck-billed Platypus

72. In which groups are diploblastic animals found?

Sponges and coelenterates

73. Which are the smallest and the largest birds?

Smallest bird – Humming bird Larges bird – Ostrich

74. Name two animals belonging to cyclostomata class

a) Lamrey (Petromyzon)

b) Hag fish (Myxine)

75. How are oviparous and viviparous animals different from each other?

Oviparous animals lay eggs, e.g. birds while viviparous animals give birth to young ones, e.g. most of the mammals.

76. What s metameric segmentation? Om which group of animals is it reported?

In metameric segmentation external body divisions corresponds with internal divisions of body cavity. It is found in annelids.

77. What is haemocoel? Which groups of animals have haemocoel?

Haemocoel is a pseudocoel with blood. It is found in arthropods and molluscs.

78. How does a male cockroach differ from a female cockroach?

A male cockroach has anal styles but no brood pouch while a female cockroach has brood pouch but no anal styles.

79. In what way, are amphibians advanced than the fishes?

Amphibians have three-chambered heart and lungs fro respiration, while fishes have two-chambered heart and gills for respiration

80. Why are bats not placed in birds?

Bats can fly like birds but like mammals they have hair, pinnae and mammary glands.

81. Why are frogs not seen in the winter months?

Frogs are cold blooded animals and cannot tolerate low temperature of winter, so they hibernate in the winter months.

82. List two differences between lizards and snakes

Lizards have limbs and eardrum while snakes do not.

83. Give one difference between cartilaginous and bony fishes.

Cartilaginous fished have ventral mouth and uncoverd fill slits while bon fishes have terminal mouth and opercualted gill slites.

84. Name ta fresh waer sponge and a coelenterate.

Spongilla, Hydra

85. Name thephylum in which animals have tissues level organisation.

Coelenteate

86. How did Carolus Linnaeus divide the living organisms?

Carolus Linnaeus studies the diversity of plants and animals and classified them as arrangement of plants and animals.

87. What is the need of nomenclature?

Nomenclature is necessary for any species to make uniformity. In local language, particular species have different names so when it is given any scientific name, it is universally accepted.

88. Differentiate between taxonomy and systematics.

Taxonomy is the process of identification, nomenclature and classification of organisms, whereas systematic is the practice of identification, nomenclature, classification and study of evolutionary relationship among organisms.

89. Give the importance of taxonomy

Importance of Taxonomy :

a) It makes the study of a wide variety of organisms easier.

b) it is essential to understand the interrelationship among different groups of organisms.

90. Differentiate between the Diploblastic and Triploblastic.

Diploblastic	Triploblastic
It means two layers of cells in the embryo, one makes up cells on the outside of the body and the other makes up inner lining of the body.	It means three layers of cells in the embryo from which differentiated tissues of the body of an organism are made.

91. Why bryophytes are called the amphibians of the plant kingdom?

Bryophytes are plants that live both on land as well as in water. They are therefore, called amphibians of plant kingdom.

Example : Moss and liverworts.

I. Short Answer Question

92. Give one example of each :

a) Asymmetry, radial and bilateral symmetry

b) acoelomates, pseudocoelomate and haemocoelomate

c) diploblastic and triploblastic animals

a) Sycon, Asterias (Stargish) and Liverfluke.

b) acoelomates, pseudocoelomate and haemocoelomate.

c) Hydra and Earthworm

93. Which phylum have the following characteristics?

a) Animals without tissues, body bearing pores.

b) Unsegmented soft-bodied having a calcareous shell, ventral foot and mantle.

c) Body segmented, jointed legs, compound eyes.

a) Porifera b) Mollusca c) Arthropoda

94. Write appropriate terms for the following :

a) Animal that is able to maintain a certain body temperature over a wide range of temperature in the environment

b) Plants which bear naked seeds

c) Animals which have pseudocoelon

a) Endothermic b) Gymnosperm c) Oseudocoelomate

95. What is binomial nomeuclature? Who proposed it? State the conventions followed

While writing the scientific name of organisms.

Binomial nomecnclature : It is the system of nomenclature in which two terms are used to denote a species of living organisms. The first term indicates the genus and the 2nd term indicates species.

96. One day Disha who is studying in class IX went to mother dairy's vegetable shop where she found some umbrella like structure being sold. She could immediately identify them.

a) What is that structure?

b) To which kingdom does that belong?

c) Write two characteristic features of organisms belonging to this kingdom.

a) Agaricus – Commonly known as mushroom

b) It belongs to kingdom fungi

c) i. Fungi are eukaryotic non green organisms
ii) They are heterotrophic in nature.

97. Explain the meaning of the terms and give an example in each of the following :

a) Symbiotic relationship **b) Cotyledons**

c) Prokaryotic

a) Symbiotic relationship : It is the relationship where two organisms work together by helping one another with the intent of getting help in return. Example :

Egrets and cattle: while the egrets get their food when they eat the insects from the skin of the cattle, the cattles get the benefit of a clean skin.

b) Coyledon : Coyledon is a part of the embryo within the seed of a plant. When the seed germinates, the cotyledons become the first leaves of the seedling. E.g. when gram seed germinates the seed breaks into two parts which look like two leaves. These leaf like structes are called cotyledon.

c) Prokaryotic : Prokaryotic cells are those that do not have a membrane bound nucleus e.g. bacteria.

98. Give differences between monocotyledonous and dicotyledonous plants.

Monocotyledonous	Dicotyledonous
i) Monocot plants have seed with single cotyledon ii) The plants have parallel venation iii) The plant has fibrous root system	i) Dicotyledon plant has seeds with two cotyledon ii) The plants have reticulate venation iii) They have taproot system

99. Disha saw a house lizard crawling on the wall and asked her mother who is a biology teacher .

a) Is body temperature related to surrounding temperature in reptiles? How can we define this feature of reptiles ?

b) What is their breathing organ?

c) Is there any reptile with four chambered heart? Summarize her mother's statement.

a) The body temperature of reptile is same as surrounding temperature. The feature in reptile is called cold blooded animal.

b) The breathing organ of reptile is lung.

c) Crocodile has four chambered heart.

Reptiles are cold blooded animals and breathing of these take place through lungs. The lungs of reptiles are 3 chambered except crocodile which has a four chambered heart.

100. State a characteristic feature of thalophytes? Name two thalophytes which are predominantly acquatic.

Characteristic features of thalophyta are :

i) They do not have well differed body design.

ii) Thlants in this group are commonly called algae.

iii) These plants are predominantly acquire

Two thalophytes which are predominantly acquatic are Spirogyra and Cladophora.

101. Why is there a need for systematic naming of living organisms? Write four conventions that are followed while writing scientific names of the species

There is a need for systematic naming of living organisms because of the following reasons.

In a community a local name serves the purpose or recognising an organism, but people in different regions call the same organism with different names.

For example, a dog is called kutta in Hindi, kukur in Bangla, naai in Tamil and kutra in Marathi and it is difficult to know different languages, Hence, a system of scientific naming was introduced by Carolus Linnaeus called as the Binomial system of Nomenclature

The four conventions that are followed while writing scientific names of the species are as follows:

a) The name of the genus begins with a capital letter.

b) The name of the species begins with a small letter.

c) When printed, the scientific name is given in italics.

d) When written by hand, the genus name and the species name have to be underlined separately.

102. How does classification of organisms help us?

Classification of organisms helps us in the following ways:

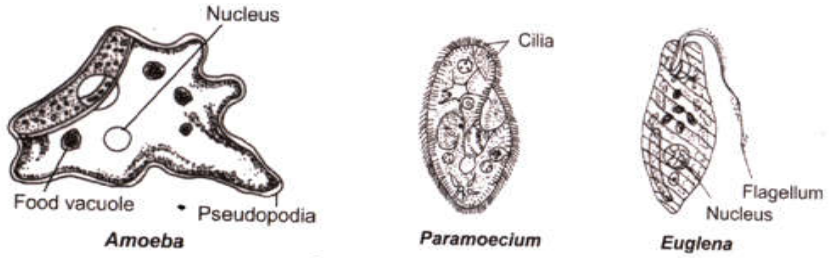
a) It makes the study of a wide variety of organisms easy.

b) It puts all life forms at a glance

c) It helps us to understand the inter-relationship among different groups of organisms

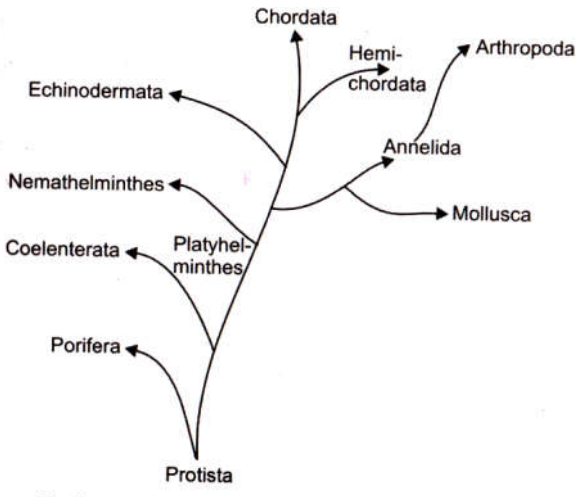
d) It helps in the development of other biological sciences.

103. Draw labeled diagram of any three Protozoans.



Protozoans

104. Draw the phylogentic tree to show the natural relationship among various animal phyla.



Phylogenetic tee indicating the relationship among various animal phyla

105. Describe the characteristics of the division Thallophyta .

The characteristic features of Thallophyta are :

a) The plant body consists of an undivided thallus

b) The sex organs are single-celled

c) After fertilisation, no embryo is formed

106. Describe the characteristic is of the division Bryophyta

The main characteristics of Bryophyta are :

a) These are the simplest land plants.

b) These have multicellular sex organs and an embryo formed after fertilisation

c) The plant body of bryophyta is flat-leaves, roots and vascular system are absent

107. Describe the characteristics of the division Pteridophyta.

The characteristic features of Pteridophyta are :

a) They are the first vascular land plants and are also called vascular cryptogams

b) Plant body of pterisophyta is made up of stems, leaves and roots.

c) In pteridophyta, the reproductive organs are multicellular.

d) They are autotrophs.

108. Why do we keep both snake and turtle in the same class?

Both turtle and snake are placed in the same. Class reptile due to the following reasons :

a) Both of them are cold blooded animals.

b) Their body is covered with epidermal scales

c) They respire through lungs only

d) Both of them have three chambered heart

e) Both of them lay eggs with thick covering

109. Write the name used for the following:

a) Plants which bear naked seeds

b) Animals which have pseudocoelom.

c) Animals which maintain a certain body temperature over a wide range of temperature in the environment

a) Gymnosperms bear baked seeds

b) Animals under phylum nematode have pseudocoelom

c) Aves and mammals maintain a certain body temperature over a wide range of temperature in the environment.

110. a) Identify the class of animals having the following characteristic features.

i) The warm blooded animals that lay eggs and have four chambered heart and a covering of feathers.

ii) The cold blooded animals having scales and they breath through lungs.

b) Give one example of an animal belonging to each of these classes :

a) i) Aves are warm blooded animals which lay eggs, have four chambered heart and a covering of feathers.

ii) Reptiles are cold blooded animals having scales and breath through lungs.

b) Example of Aves : Peacock

Example of reptile : Snake

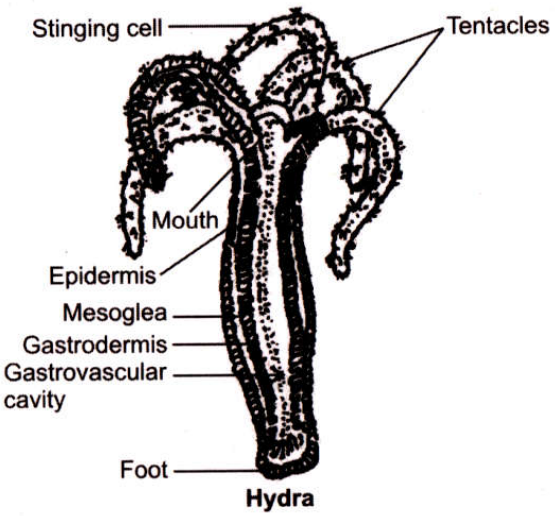
111. a) Draw a neat diagram of a Hydra

b) Label mesoglea nad gastrovascular cavity

c) Name the group of animals it belongs to

d) Name one species of this group which lives in colonies.

a)



b) See the diagram (a)

c) IT belongs to Phylum Coelenterata

d) Coral species of phylum coelenterata live in colonies

112. a) List any two main characteristics of protochordates

b) In which class would you place any organism which has :

i) four chambered heart and lay eggs.

Skeletons made of both bones and cartilage and are cold – blooded.

a) Two main characteristics of chordate are :

i) They are exclusively marine, triploblastic and coelomate.

ii) A long rod-like support structure called notochord is present at some stage of life. This structure runs along the back of the animal which separates the nervous tissue from gut.

b) i) Vertebrate class, Aves lay eggs and have four – chambered heart.

ii) Pisces are cold-blooded animals and their skeleton is made of both bones and cartilage.

113. Give one point of difference between :

a) Bony and cartilaginous fish

b) Bilateral and radial symmetry

c) Notochord and nerve cord

a) **Bony fish** have terminal mouth and operculated gill slits while cartilaginous fish have ventral mouth and uncovered gill slits.

b) **In bilateral symmetry**, body can be divided into two similar parts by only one plane along longitudinal axis of the body e.g. vertebrates.

In radial symmetry, body can be divided into two similar parts by any plane along oral-aboral axis of body, e.g. coelenterates.

c) **Notochord** is the backbone and in some animals, it is replaced by a joint vertebral column. Serve cord is a collection of nerve fibres inside the vertebral column.

114. Differentiate between a plant and an animal.

Differences :

Characteristics	Plants	Animals
a) Movability	Stationary	Move freely
b) Food habits	Plants prepare their own food from CO_2 and H^2O in the presence of sunlight and chlorophyll. Thus plants are autotrophs	Animals cannot prepare their own food. They eat plants or other animals
c) Growth	Plants grow through their lives	Thus, animals are heterotrophs
d) Cell structure	A plant cell is surrounded by a cell wall and contains chloroplasts	Animals grow up to a certain age. Animal cells neither have cell wall nor do they contain chloroplasts

115. List some adaptations of reptiles towards terrestrial mode of life.

The adaptations of reptiles towards terrestrial mode of life. are :

a) Skin is thick, dry and non-glandular to check the loss of water.

b) Body is covered by an exoskeleton of epidermal scales which forms a water-proof coat

c) Excretion is uricotelic which requires minimum water loss.

d) Main mode of respiration is pulmonary respiration.

e) Fertilisation is internal as male has copulatory organs.

f) Embryo is protected by embryonic membranes, so reptiles have become first true terrestrial vertebrates.

116. List a few flight adaptation in birds.

The main flight adaptations in birds are :

a) Forelimbs are modified into wings

b) Body is covered by exoskeleton of feathers.

c) Long bones are pneumatic, having air cavities

d) Body is streamlined to reduce air resistance

e) Well developed flight muscles

f) Presence of air sacs helps in respiration

g) Tail feathers form a steering apparatus.

117. Give the main differences between Bryophyta and Pteridophyta

Differences :

Bryophyta	Pteridophyta
a) The plant body is not differentiated into true roots, stems and leaves	a) The plants body is divided into true roots, stems and leaves
b) The main plant body is gametophytic	b) The main plant body is sporophytic
c) Bryophytes are terrestrial, non-vascular plants	c) Pteridophytes are terrestrial, vascular plants.

118. State any two characteristics of mammals. Name two egg laying mammals.

Two characteristics of mammals are

a) They are warm-blooded animals

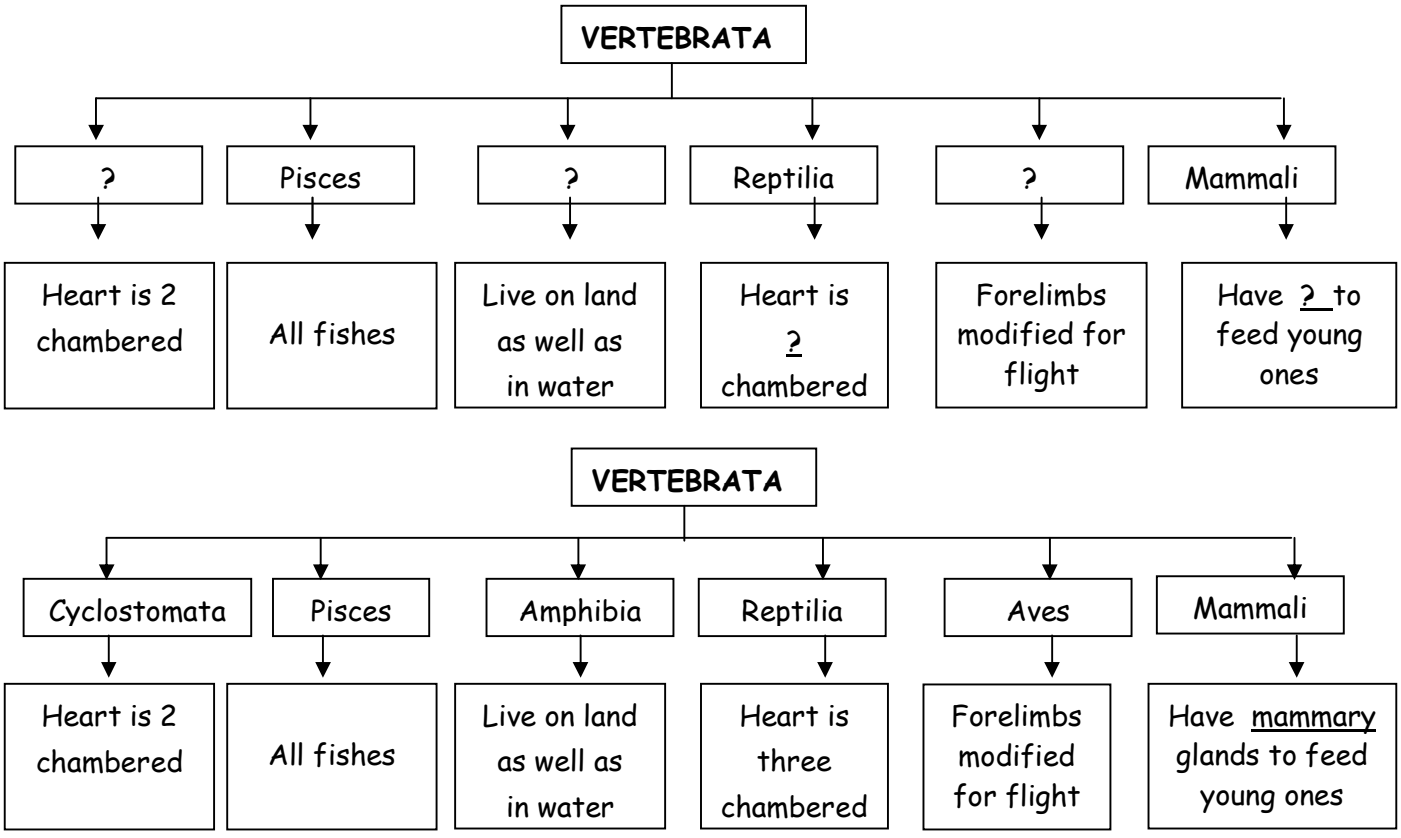
b) Heart is four –chambered

Two egg laying mammals are platypus and echidna.

119. An animal is dorsoventrically flattened, has three embryonic germ layers and is acoelomate. Which phylum does it belong to ? What are they commonly called as flatworms

The Animal belongs to phylum platyhelminthes. They are commonly called as flatworms. Example : Planaria

120. Complete



121. a. State two characteristics features of nematode

b. Identify the phylum with the help of followoing features:

i) Spiny – skinned, radial symmetrical and have tube feet

ii) triploblastic, worm like having segmented body

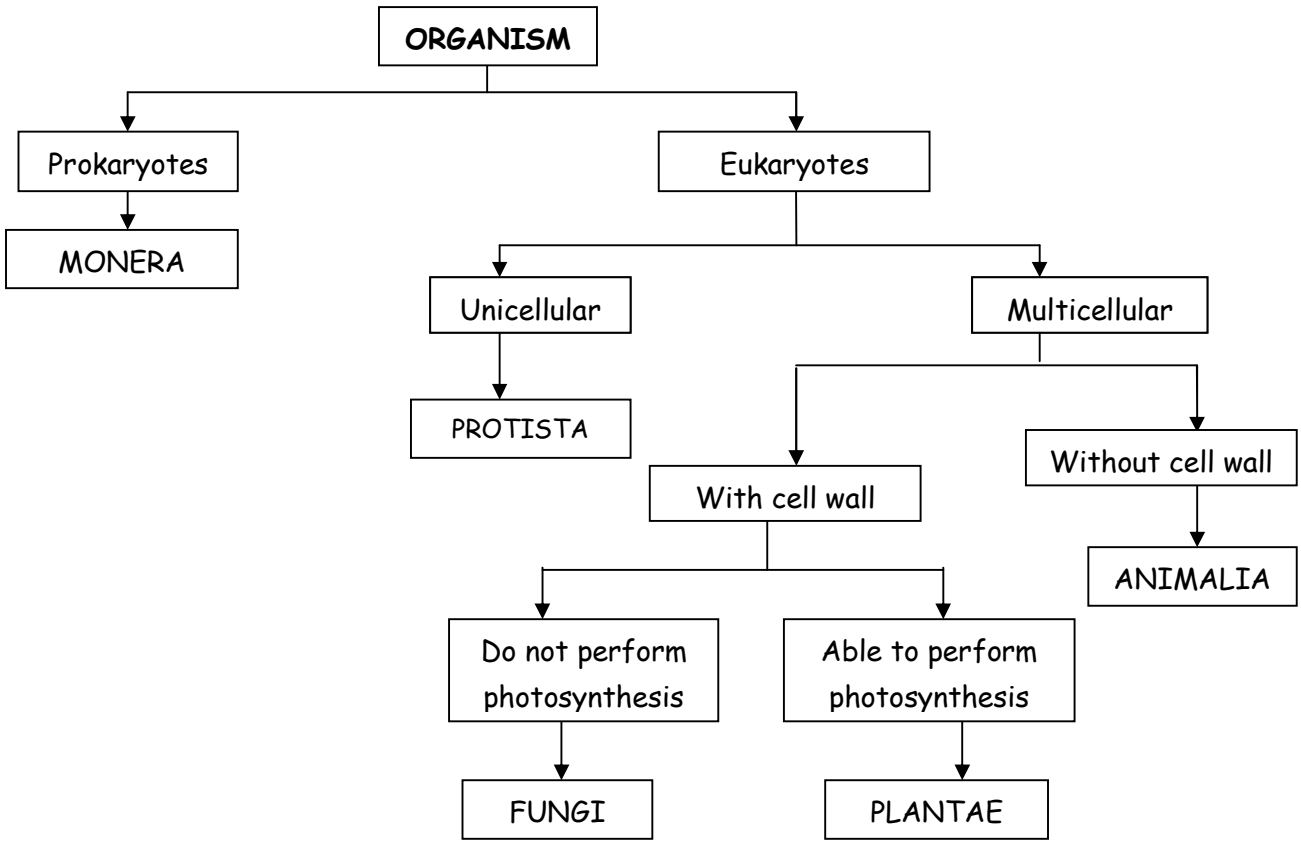
a) i) The body is bilaterally symmetrical and triplblastic

ii) The body cavity is not a true coelom, it is called pseudocoelom

b) i) Echinodermata ii) Nematode

I. Long Answer Question

122. Draw a flow diagram to show the five kingdom classification



123. Write the characteristic features of Kingdom Monera

The characteristic features of Kingdom Monera :

a) These organisms are prokaryotic, i.e. they do not have a well – defined nucleus and lack cellorganelles.

b) Some of the organisms have cell wall €like bacteria and blue-green algae), while others lack cell wall (mycoplasma)

c) Mode of nutrition is either autrotrophic (as in blue-green algae and some bacteria) or heterotrophic (mycoplasma and most bacteria.

Examples : Bacteria, blue-green algae or cyanobacteria and mycoplasma

124. Give five kingdoms of life in a tabular form mentioning their features with examples

Five kingdoms of life as proposed by whittaker (1959)

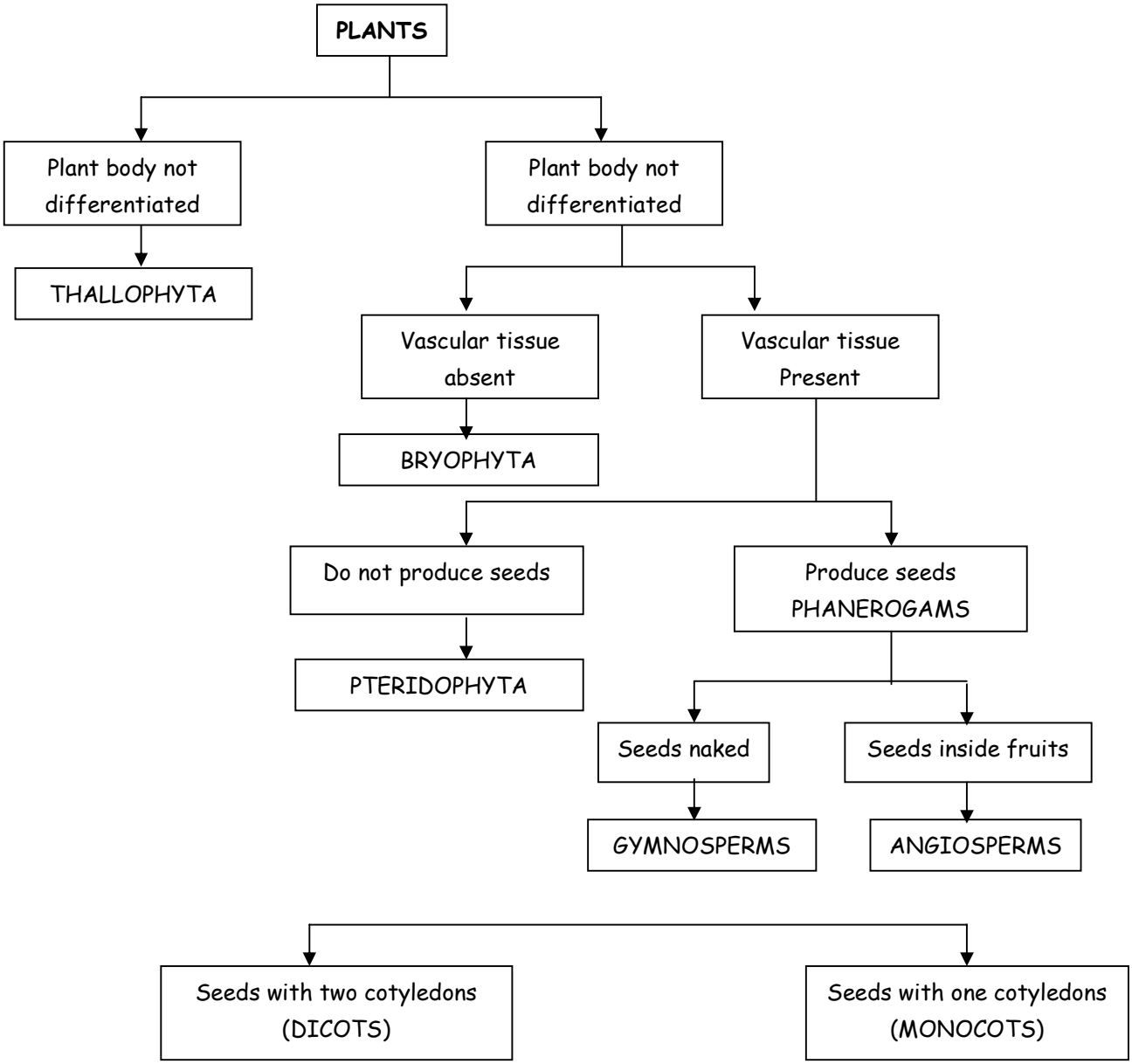
Kingdom	Cell complexity	Complexity of Organisms	Mode of Nutrition	Ecological role	Other characteristics and examples
1. Monera	Prokaryotic	Unicellular	Heterotropoh or Autotroph	Decomposer	Locomotion by flagella e.g. Bacteria
2. Protista	Eukaryotic	Unicellular	Heterotrop or Autotroph	Consumer	Intracellular movement e.g. amoeba
3. Fungi	Eukaryotic	Multiicellular	Saprophypte or Parasite	Decomposer	Cell wall made of chitin e.g. Yeast
4. Plantae	Eukaryotic	Multicellular	Autotropoh	Producer	Tissue differentiation well developed e.g. ferns
5. Animalia	Eukaryoti	Multiicellular	Heterotroph	Consumer	Cell wall absent, e.g. Sponges

125. Draw a flow chart to show different divisions of kingdom planate and answer the following:

a) Which division has the simplest plants?

b) To which division Pinus and Cycas belong?

c) What is the other name given to flowering plants? Classify them on the basis of number of cotyledons present in the seed.



a) Thallophyta has the simplest plants

b) Both Pinus and Cycas belong to Gymnosperms

c) Flowering plants are called Angiosperms. Depending on the number of cotyledons present in the seed, they are divided into monocotyledonous and dicotyledonous. Monocotyledonous plant has single 'seed leaf' or cotyledon and dicotyledonous plant has two 'seed leaves' or cotyledons

126 a) To which divisions of plantae do algae belong? Write one characteristic of the division. Give two examples

b) Name the group :

i) Which includes unicellular eukaryotic organism.

ii) In which mode of nutrition is saprophytic

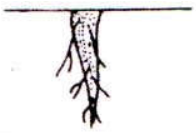
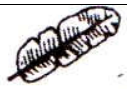
iii) In which seeds are not closed in fruit.

a) Algae belong to the division Thallophyta. One characteristic of Thallophyta is that the plants are predominantly aquatic. Example : Spirogyra and Cladophora.

b) i) Protista ii) Fungi iii) Gymnosperm

127. With the help of diagram. Give the difference between dicotyledons and monocotyledons

Differences :

Plant Parts	Dicotyledons	Monocotyledons
Seed/Embryo	 Embryo with two cotyledons	 Embryo with single cotyled
Root	 Prominent primary root	 Fibrous root
Leaf	 Reticulate venation	 Parallel venation
Flower		 Trimerous

128. a) What is the scientific name of humans?

b) To which class of vertebrates does it belong?

c) Write five characteristic features of this group. Also mention the exceptions, if any.

a) Homo sapiens

b) Human belongs to the class mammalian of vertebrates.

c) Five characteristic features of class mammalian are :

i) They are warm-blooded animals

ii) They have four chambered heart

iii) They have mammary glands for production of milk to nourish their young ones.

iv) The skin of mammals have hair as well as sweat and oil glands.

v) They give birth to young ones.

The exceptions to the above characteristics of mammal are platypus and echidna who lay eggs.

129. Name the six classes of vertebrates. Compare any two on the basis of their :

a) Habitat **b) covering of skin**

c) Respiratory organs **d) Chambers of heart**

e) Reproduction

The six classes of vertebrates are : Cyclostomata, Pisces, Aves and Mammalia.
Comparison of Pisces and Aves.

Pisces	Aves
a) They are exclusively water living animals	a) They live on land
b) The body is covered with scales	b) The body is covered with a feathery exoskeleton
c) Their respiration is through gills	c) Their respiration is through lungs
d) The heart is two chambered	d) The heart is four chambered
e) They lay eggs	e) They also lay eggs.

130. a) Write four important feature that all chordates possess (vertebrates)

b) Write one characteristic each of amphibian and aggs.

c) Write the name of the class to which following belong:

i) sea horse **ii) king cobra**

a) The four important features that all chordates possess are as follows:
i) They have a notochord and a dorsal nerve cord

ii) They are triploblastic

iii) They have paired gill pouches

iv) They are coelomate b) One characteristic each of

Amphibia – They have mucus glands in the skin and three – chambered heart.

Aves: - They have an outside covering of feather and two forelimbs are modified for flight. They have a four – chambered heart.

c) The class to which the following belong:

i) Sea horse – Pisces

ii) King cobra – Reptilia

131. You must have observed the following animals in your surrounding environment or in a Zoo. Mention the class to which they belong and give one characteristic feature of each. Frog, fish, lizard, pigeon, bat

Animals	Class	Characteristic feature
a) Frog	Amphibia	- They have mucus glands in the skin without scales - The body is covered with scales.
b) Fish	Pisces	-Two pairs of pentadactyl limbs are present
c) Lizard	Reptilia	- Body is covered with a feathery exoskeleton
d) Pigeon	Aves	- Their skin has hair as well as sweat and oil glands.
e) Bat	Mammalia	

132) Write the characteristics of Phylum Porifera

The characteristics of Phylum Porifera:

a) They are the simplest multicellular animals

b) They are mostly marine but a few live in fresh water

c) Sense organs are absent

d) They reproduce asexually by budding, fragmentation and sexually through fertilization

e) The body is highly perforated with pores (ostia) and a single large opening called osculum on the top.

f) The skeleton consists of calcareous or siliceous spicules or sponging fibres.

g) No mouth or anus

h) Sponges have characteristic canal system for water to flow through them

i) The body is vase-like rounded or sac-like

Examples are Sycon, Spongilla (fresh water sponges).

133. Write the characteristics of phylum Coelenterata.

The characteristic features of Phylum Coelenterates :

a) They are aquatic, may be fresh water or marine, solitary or colonial forms

b) They are radially symmetrical

c) Tentacles are present

d) They have both extracellular and intracellular digestion

e) Gastro – vascular cavity of coelenterons is present as the centre of the body

f) These organisms show two morphological forms, i.e. Polyps and Medusa g) They reproduce asexually in polyp form and sexually in medusa form

h) Some forms possess hard exoskeleton of lime to form corals.

Examples are Hydra, Obelia, Aurelia, Jelly – fish Corals, etc.

134. Write the characteristic features of phylum Platyhelminthes

The main characteristics of Phylum Platyhelminthes

a) These organisms are mostly parasitic but some are free – living

b) The body is dorsoventrally flattened and bilaterally symmetrical

c) They possess three germ layers, i.e. triploblastic

d) They are mostly hermaphrodite

e) They can regenerate from a small body part

Examples are Fasciola (liver fluke), Schistosoma (blood fluke) and Taenia solium (tape worm)

135. Write the characteristic features of phylum Nematoda.

The main characteristics of Phylum Nematoda:

a) They are parasitic or free – living

b) Body size varies from microscopic to several centimeters in length

c) Body is unsegmented and bilaterally symmetrical.

d) They are triploblastic

e) Alimentary canal complete but no circulatory and respiratory systems.

f) Sexes are separate

Examples are Ascaris (roundworm), Wuchereria (filarial worm)

136. Write the characteristic features of phylum Annelida

The characteristic features of Phylum Annelida

a) Long, segmented, bilaterally symmetrical body covered by a thin cuticle

b) They live in moist soil, fresh water and sea.

c) Body is red due to the presence of haemoglobin

d) Locomotory organs – chitinous setae and parapodia are present

e) Body is red due to the presence of haemoglobin

f) Excretory and nervous systems are present.

g) Sexes may be separate or united (hermaphrodite)

Examples are Pheretima (earthworm), Hirudinaria (cattle leech), Aphrodite (sea mouse)

137. Write the characteristic features of phylum Arthropoda:

The characteristic features of Phylum Arthropoda

a) It is the largest phylum of the animal kingdom having bilaterally symmetrical body structure.

b) They are found in all types of habitat, viz. land, soil and water

c) They possess jointed legs.

d) The body is divided into three regions- head thorax and abdomen

e) Mature body has blood –filled cavity or haemocoel. Blood is white in colour.

f) The head bears sensory organs and brain

g) The exoskeleton is made up of chitin

h) Respiration is by gills, trachea or book lungs

i) They have compound eyes and mosaic vision.

f) Sexes are separate

Examples are Periplaneta (cockroach), Anopheles (mosquito), Palaemon (prawn)

138. Write the characteristic features of Phylum Mollusca.

The characteristic features of Phylum Mollusca:

a) They have soft, unsegmented body and body is divisible into three regions – head, visceral mass and ventral foot

b) Outer surface is covered with hard calcareous shell

c) Sexes are separate

d) Respiration occurs by gills called ctenidia

e) They may be terrestrial or aquatic

Examples are Pila (snail), Unio (fresh water mussel), Octopus.

139. Write the characteristics of class Echinodermata.

The characteristics features of class Echinodermata.:

a) They are marine, having bilateral symmetry in larval forms and radial symmetry in adults.

b) The body shape may be star-lie, spherical or elongated

c) The body is unsegmented and its surface is covered by calcareous spicules.

d) Locomotion is by means of tube-feet

e) Brain absent but nervous system present

f) Respiration through tube-feet and gills

g) Sexes are separate

h) Body cavity is modified into water vascular system

Examples are Asterias (Star fish), Echinus (sea urchin), Holothuria (sea cucumber)

140. Give the comparative summary of the vertebrate classes

Comparative summary of the vertebrate classes

Characteristics	Cyclostomata	Pisces	Amphibians	Reptiles	Aves	Mammals
a) Habitat	Aquatic	Aquatic	Terrestrial and aquatic both	Terrestrial	Arboreal	Terrestrial, Aquatic and Arboreal
b) Exoskeleton	Soft, smooth slimy and scale less	Slimy, scaly	Slimy, non-scaly	Dry, scaly	Feathers are present	Hair are present
c) Heart	Two chambers	Two chambers	Three chambers	Three chambers	Four chambers	Four chambers
d) Respiratory organ	Gills present in sac-like pouches of pharynx	Gills	Gills, lungs and skin	Lungs	Lungs	Lungs
e) Locomotory organ	Fins	Fins	Limbs	Limbs	Wings	Limbs
f) Production of off springs	Oviparous	Oviparous	Oviparous	Oviparous	Oviparous	Viviparous

141. Give the scientific names of the following:

a) Liver fluke **b) Tape worm** **c) Cattle leech** **d) Cockroach**

e) Housefly **f) Starfish** **g) Indian Shark** **i) Frog**

j) Flying Lizard

a) Fasciola hepatica b) Taenia solium

c) Hirudinaria granulose d) Periplaneta Americana

e) Musca domestica f) rubens

g) Scoliodon laticaudus h) Anabas testudineus

i) Rana tigrina j) Draco

142. Give five examples of mammals wither their scientific names.

a) Kangaroo - Macropus rufus

b) Rhesus monkey - Macaca mulatta

c) Elephant - Elephas maximus

d) Tiger - Panthere tigris

e) Man - Homo sapiens

NCERT

I. Short answer questions

1. Write true (T) or false (F):

a) Whittaker proposed five kingdom classification

b) Monera is divided into Archaebacteria and Eubacteria

c) Starting from Class, Species comes before the Genuus

d) Anabaena belongs to the kingdom Monera

e) Blue-green algae belongs to the kingdom Monera

f) All prokaryotes are classified under Monera.

a) T b) T c) F d) T

e) F f) T

2. Fill in the blanks :

a) Fungi shows _____ mode of nutrition

b) Cell wall of fungi is made up of _____.

c) Association between blue-green algae and fungi is called as _____.

d) Chemical nature of chitin is _____.

e) _____ has smallest number of organisms with maximum number of similar characters

f) Plants without well – differentiated stem, root and leaf are kept in _____.

g) _____ are called as amphibians of the plant kingdom.

a) Saprophytic b) chitin c) lichen d) carbohydrate

e) species f) thallophyta g) Bryophytes

3. You are provided with the seeds of gram, wheat, rice pumpkin, maize and pea. Classify them whether they are monocot or dicot.

Monocot	**Dicot**
Wheat	Gram
Rice	Pumpkin
Maize	Pea

4. Match items of column (A) with items of column (B)

Column (A)	Column (B)
a) Naked seed	A) Angiosperms
b) Covered seed	B) Gymnosperms
c) Flagella	C) Bryophytes
d) Marchantia	D) Euglena
e) Marsilea	E) Thallophyta
f) Cladophora	F) Pteridophyta
g) Penicillium	G) Fungi

a) ⟶ B b) ⟶ A c) ⟶ D

d) ⟶ C e) ⟶ F f ⟶ E g) ⟶ G

5. Match items of column (A) with items of column (B)

Column (A)	Column (B)
a) Pore bearing animals	A) Arthropoda
b) Diploblastic	B) Coelenterata
c) Metameric segmentation	C) Porifera
d) jointed legs	D) Echinodermata
e) Soft bodied animals	E) Mollusca
f) Spiny skinned animals	F) Anneldia

a) ⟶ C b) ⟶ B c) ⟶ F

d) ⟶ A e) ⟶ E f ⟶ D

6. Classify the following organisms based on the absence /presence of true coelom (i.e. acoelomate, pseudocoelomate and coelomate

Spongeilla Sea anemone

Planaria Liver fluke

Wuchereria Ascaris,

Nereis Earthworm

Scorpion Birds

Fishes Horse

Acoelomate	Pseudocoelomate	Coelomate
Spongilla Sea anemone Planaria Liver fluke	Wuchereria Ascaris,	Nereis Earthworm Scorpion Birds Fishes and Horse

7. Endoskeleton of fishes are made up of cartilage and bone : classify the following fishes as cartilaginous or bony.

Torpedo Sting ray, Dog fish

Rohu Angler fish Exocoetus.

Cartilagenous	**Bony**
Torpedo Sting ray, Dog fish Angler fish	Rohu Exocoetus.

8. Classify the following based on number of chambers in their heart

Rohu, Scoliodon, Frog, Salamander, Flying lizard, King cobra, Crocodile, Ostrich, Pigeon, Bat, Whale

Rohu, Scoliodon - 2- Chambered

Frog, Salamander, Flying lizard, King cobra - 3- Chambered

Crocodile, Ostrich, Pigeon, Bat, Whale - 4- Chambered

9. Classify Rohu, Scoliodon, Frog, Salamander, Flying lizard, King cobra, Crocodile, Ostrich, Pigeon, Bat and Whale into the cold blooded / warm blooded animals.

Cold blooded animals - Rohu, Scoliodon, Frog, Salamander, Flying lizard, King cobra, Crocodile,

Warm blooded animals - Ostrich, Pigeon, Bat ,Whale

10. Name two egg laying mammals

a) Duck-billed Platypus

b) Echidna

11. Fill in the blanks :

a) Five kingdom classification of living organisms is given by _____.

b) Basic smallest until of classification is _____.

c) Prokaryotes are grouped in Kingdom _____.

d) Paramecium is a protista because of its. _____.

e) Fungi do not contain _____.

f) A fungus _____ can be seen without microscope.

g) Common fungi used in preparing the bread is _____.

h) Algae and fungi form symbiotic association called _____.

a) Robert Whittaker

b) Species

c) Monera

d) Eukaryotic , unicellular, organisms

e) Chlorophyll

f) Mushroom

g) Yeast

i) Lichens

12. Give True (T) and False (F);

a) Gymnosperms differ from Angiosperms in having covered seed.

b) Non – flowering plants are called Cryptogamae

c) Bryophytes have conducting tissue.

d) Funaria is a moss

e) Compound leaves are found in many ferns,

f) Seeds contain embryo

a) False b) True c) False d) True

e) True f) True

13. Give examples for the following :

a) Bilateral, dorsiventral symmetry is found in _____.

b) Worms causing disease elephantiasis is _____.

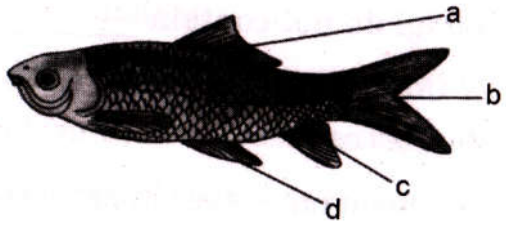
c) Open circulatory system is found in _____ where coelomic cavity is filled with blood.

d) _____ are known to have pseudocoelom

a) Liver fluke b) Filarial worm (Wuchereria)

c) Arthropods e) Nematodes (Roundworms)

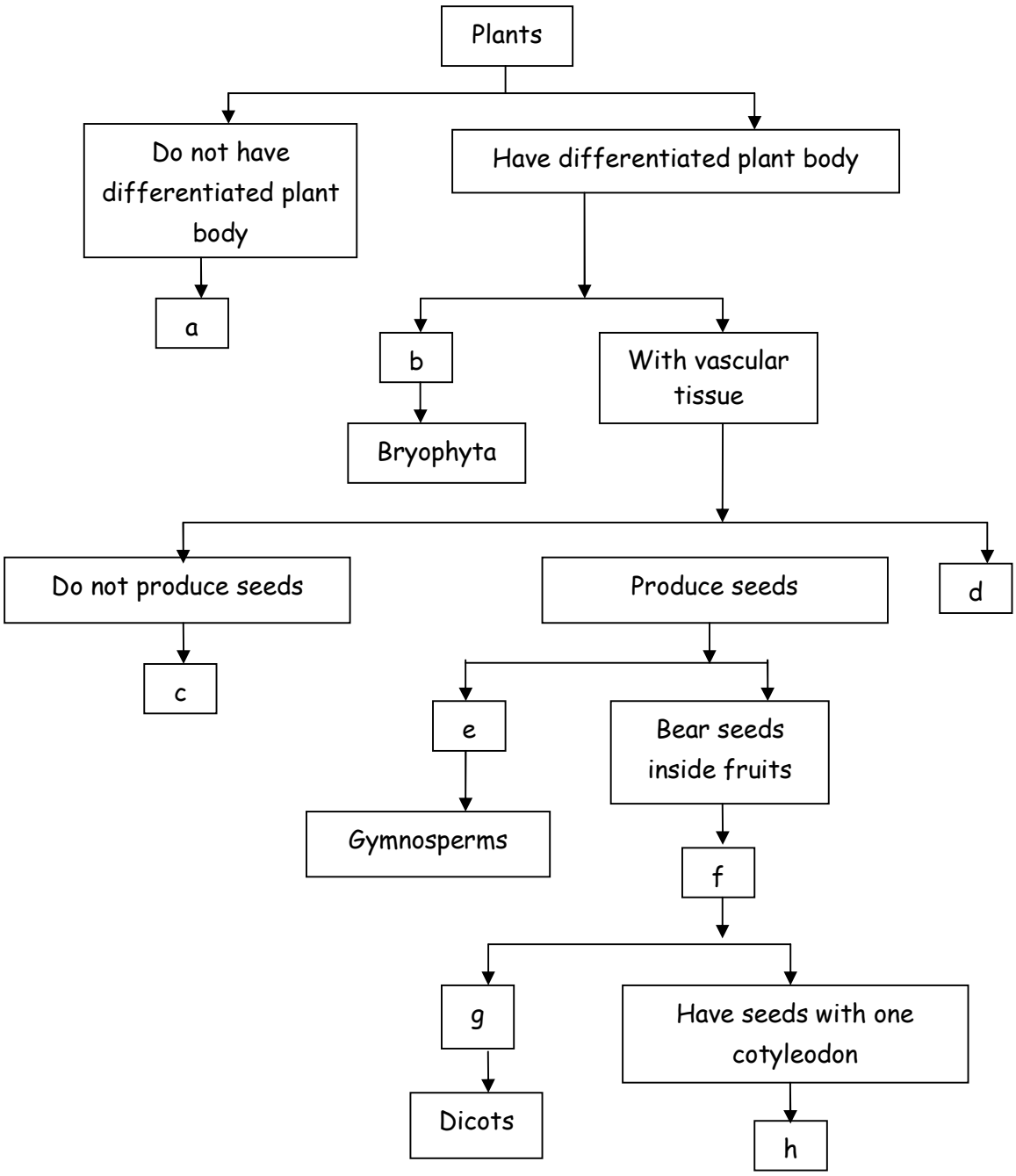
14. Label a, b, c and d given in figure. Give the function of b.



a) Dorsal fin b) Caudal fin c) Anal fin d) Pelvic fin

Function of Caudal fin – It helps in streamlined movement in water.

15. Fill in the boxes given in figure with appropriate characteristics / plant group (s)



a) Thallophyta

b) Without specialized vascular tissue

c) Pteridophyta

d) Phanerogams

e) Bear naked seeds

f) Angiosperms

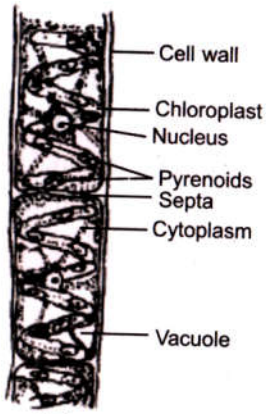
g) Have seeds with two cotyledons

h) Monocots

I. Long answer questions

16. Write names of few thallophytes. Draw a labeled diagram of Spirogyra

Ulothrix, Spirogyra, Cladophora and Chara are the examples of Thallophyta

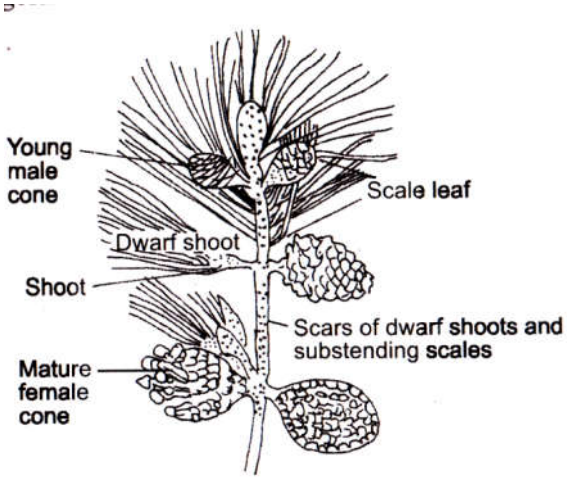


Spirogyra

17. Thallophyta, bryophyte and pteridophyta are called as 'Cryptogams'. Gymnosperms and Angiosperms are called as 'phanerogams'. Discuss why? Draw one example of Gymnosperm.

The Thallophyta bryophyte and pteridophyta are called as 'Cryptogams' because the reproductive organs of these groups are inconspicuous or hidden and do not bear flowers or seeds. Gymnosperms and Angiosperms are called as 'phanerogams' as they have conspicuous reproductive organs with seeds containing

an embryo with stored food, which serves for the initial growth of the embryo during germination.



(Pinus)

A Gymnosperm

18. Define the terms and give one example of each

a) Bilateral symmetry **b) Coelom** **c) Triploblastic**

a) Bilateral symmetry is a type of symmetry in which appendages and organs of the body are paired in which the left and right halves of the body have the same design, e.g. liver fluke

b) Coelom is mesoderm lined fluid filled internal body cavity between visceral organs and body wall in which well developed organs can be accommodated e.g. butterfly.

c) Triploblastic are animals having three layers of cells from which differentiated tissues can be made, e.g. star fish.

19. You are given leech, Nereis, Scolopendra, prawn and scorpion; and all have segmented body organization. Will you classify them in one organization. Will you classify tem in one group? If no, give the important characters based on which you will separate these organisms into different groups.

All organisms given in the question do not belong to same group. Leech and Nereis belong to Phylum Annelida because they have metamerically segmented body i.e. body is divided into many segments internally by septa, closed circulatory system and unjointed appendages. Body segments are lined up one after the other from head to tail. But Scolopendra, Prawn and Scorpion belong to Phylum Artropoda and they have jointed appendages and open circulatory system.

20. Whichorganism is more complex and evolved among Bacteria, Mushroom and Mango tree? Give reasons

Mango tree because it has :

a) Vascular tissues

b) differentiated sporophyte

c) embryo stage

d) seeds present inside fruit

But bacteria are prokaryotic, Mushroom is eukaryotic but without any differentiation of root, stem and leaves absence of vascular tissue and embryo stage.

21. Differentiate between flying lizard and bird, Draw the diagram

Differences :

Flying Lizard	Bird
a) It belongs to class Reptilia b) It is cold blooded animal c) It has 3-chambered heart d) Feathers are absent e) Forelimbs are normal f) Body is covered by scale	a) It belongs to class Aves b) It is war-blooded animal c) It has 4-chambered heart d) Feathers are present e) Forelimbs modified into wings f) Scales are restricted to hindlimbs
 **Flying Lizard** (*Draco*)	 **Pigeon**

22. List out some common features in cat, rat and bat

Bat, rate and cat belong to Class Mammalia and have following common features:

a) Mammary glands are present

b) External pinnae are present

c) Viviparous animals

d) Notochord present at some stage of life cycle

e) Warm- blooded animal

f) Four-chambered heart is present

g) Skin covered with hair and with sweat and oil glands

h) All the tree mammals produce live young ones

23. Why do we keep both snake and turtle in the same class?

We keep both snake and turtle in the same class because both are :

a) cold – blooded

b) have scales

c) breathe through lungs

d) have three chambered heart

e) lay eggs with tough covering