

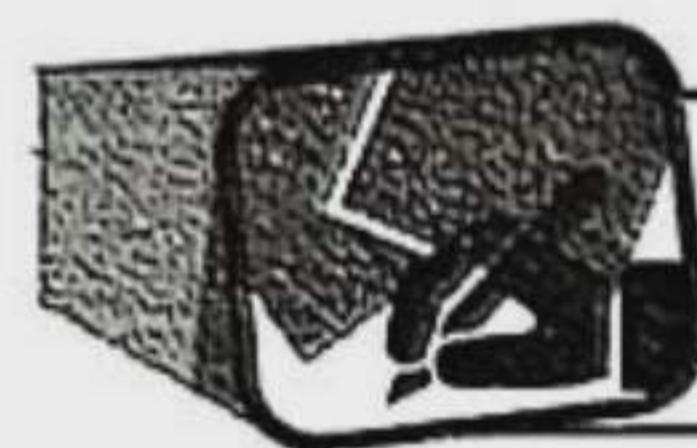
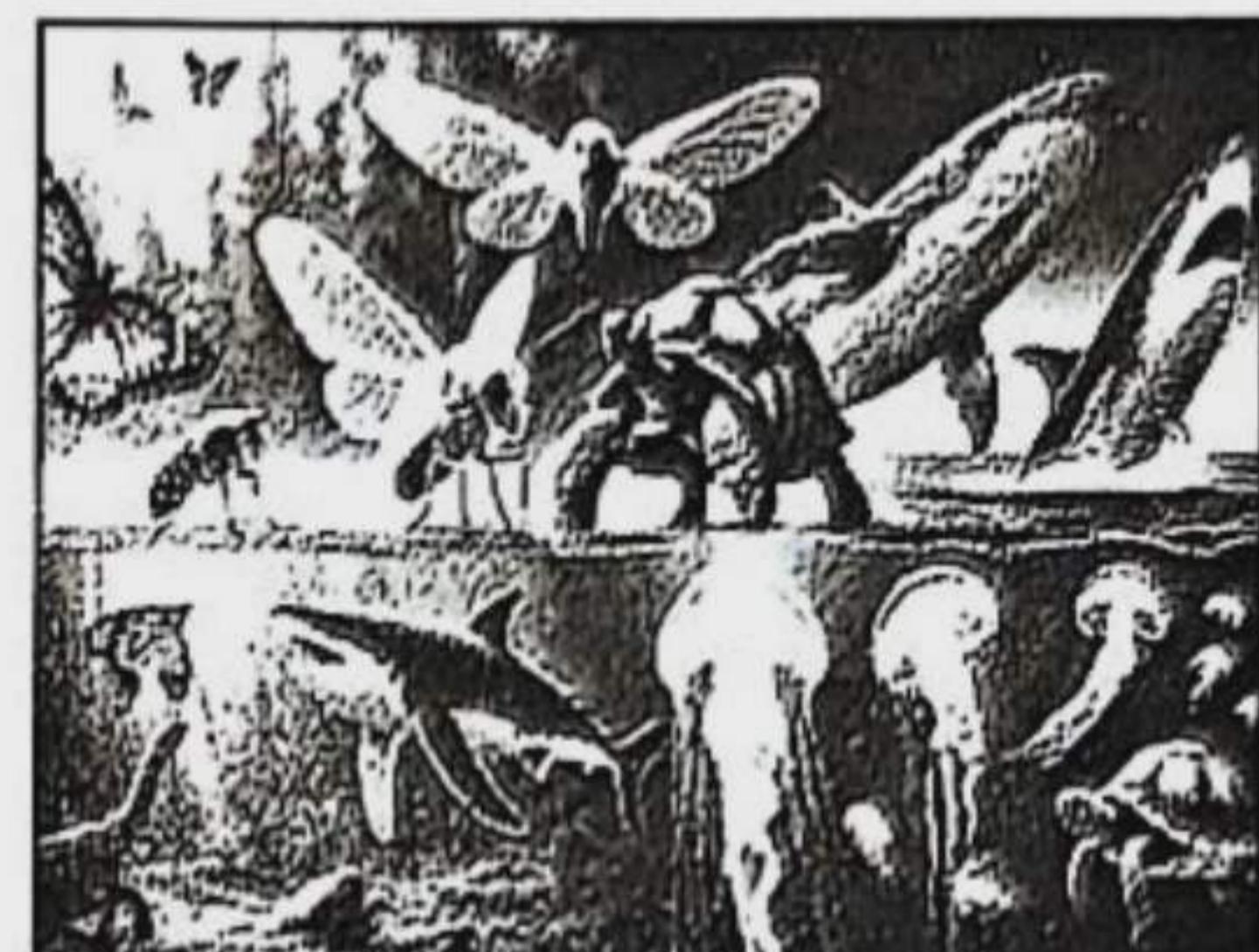
Classification of Animal World

Contents for Discussion

- Classification of animal world
- Classification of invertebrate animals
- Classification of vertebrate animals
- Necessity of classification

Learning Outcomes : After studying this chapter I will be able to—

- classify invertebrate animals;
- classify vertebrate animals;
- explain the necessity of classification of the living world.



Practice



Multiple Choice, Short & Creative Q/A
following 100% accurate format for best prep.

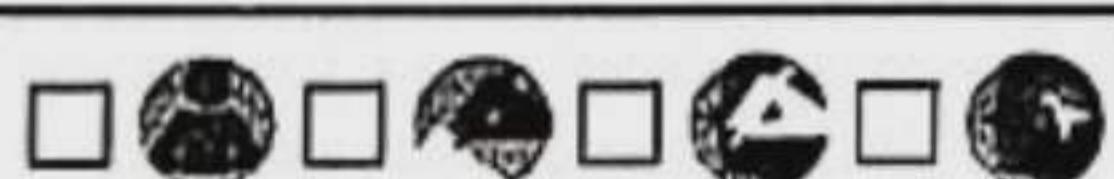
Dear learners, the Q/A of this chapter have been divided into exercise, multiple choice, short, creative & exercise-based activities in light of the learning outcomes. Practice the questions well to ensure the best preparation in the exam.



Textual Q/A



Let's learn the textbook Q/A



Fill in the Blanks



- Excretory system of liver fluke is —.
- Blood filled body cavity of prawn is known as —.
- use muscular foot for locomotion.
- Members of the sub-phylum — are known as vertebrates.
- Members of the sub-phylum Urochordata have — in their tail.

Ans. 1. flame cell; 2. haemocoel; 3. Mollusca; 4. vertebrates; 5. notochord.



Short Answer Questions



Question 1. How many parts are there in binomial nomenclature of an animal? Mention the name of these parts. What is the scientific name of human?

Ans. A binomial name is composed of two parts meaning two words. Both the words are Latin and written in italics. The first word denotes genus. It begins with capital letter. The second word denotes species and begins with small letter. In case of hand writing, names should be underlined. The scientific name of human is *Homo sapiens*.

Question 2. Write the names of five known arthropods.

Ans. Five known arthropods are :

- shrimp
- cockroach
- crab
- spider
- butterfly.

Question 3. Which phylum does prawn belong to? What are the characteristics of this phylum?

Ans. Prawns belong to the phylum Arthropoda. Characteristics of Arthropoda :

- Body is segmented.
- Body consists of head, thorax and abdomen.
- Each segment has a pair of swimming legs which are not segmented.
- The head contains a pair of compound eyes and a pair of large antenna.
- Body is soft and is covered with hard shell composed of chitin, a hard substance.
- Body cavity is blood-filled and is known as haemocoel.

Question 4. Mention the characteristics of mammals.

Ans. Characteristics of mammals :

- Body is covered with hair.
- Except a few cases, they give birth to young.
- They are warm-blooded.
- They have different types of teeth in their jaw.
- Mammary glands develop in females. Youngs feed on mother's milk produced from the mammary glands.
- Their heart is four-chambered — two atria and two ventricles.

Question 5. What are the characteristics of Urochordata?

Ans. Characteristics of Urochordata :

- Presence of gill slits and single hollow dorsal nerve cord at the embryonic stage.
- Presence of notochord in the tail.

**MCQs with Answers**

1. Which animal belongs to the phylum Mollusca?
a Crab **b** Leech **c** Starfish **d** Mussel
► Explanation :
 (a) Crabs are animals of Arthropoda phylum.
 (b) Leech is an animal of Annelida phylum.
 (c) Starfish are animals of the Echinodermata phylum.
 (d) Mussels are animals of Mollusca phylum.

2. Both Scypha and Hydra are—.

- i. Diploblastic
- ii. Multicellular
- iii. Devoid of well developed organ system

Which one of the following is correct?

- d** **a** i & ii **b** i & iii **c** ii & iii **d** i, ii & iii
► Explanation : Scyphae are the simplest multicellular organisms. Although multicellular, they do not form tissue. They have no separate well-organized organs and systems. Hydra's body is made up of two embryonic layers. The outer layer of the body is ectoderm and the inner layer is endoderm i.e. two layers. Hydra is multicellular because it contains stinging cells, muscle cells, nerve cells, reproductive cells, etc. As hydra cells are tissue level organisms, no complex tissues, tissue systems, organs or organelles are seen in their internal structure. That is, without a well-structured system.

- Based on the chart below, answer questions no. 3 & 4 :

m	Animal having wing and haemocoel.
n	Animal having feather and air sacs with lung.
o	Cold-blooded animal and lays eggs.
p	Animals with scale and paired fins.

3. Which animal of the chart is invertebrate?

- a** **a** m **b** n **c** o **d** p

► Explanation : The 'm' animal in the stimulus table is an invertebrate.

They are animals of Arthropoda phylum. Their body is divided into three regions: head, thorax and abdomen and there are jointed appendages. Excretory organ called Malpighian duct is present. The blood-filled cavity of the body is known as hemocoel. Example: Butterfly, Prawn, Cockroach, Crab etc.

4. Can fly—.

- i. m & n animal
- ii. n & o animal
- iii. m & p animal

Which one of the following is correct?

- d** **a** i **b** i & ii **c** ii & iii **d** i, ii & iii

► Explanation :

(a) m is an animal of Arthropoda phylum. The blood-filled cavity in their Body is known as hemocoel. For example - Crab, butterfly, fly etc.

(b) n is an animal of the phylum Chordata of the class of birds. Their bodies are covered with feathers. Air sacs with lungs make it easy to fly. For example - crow, dove, duck etc.

(c) p is an amphibian. They lay their eggs in water and are cold blooded. For example - frog.
 (d) p is an animal fish of Ostichthyes class. They have scale and fin.

That is, animals that can fly are m and n.

**Creative Questions with Answers**

Ques. 01



P

Q

- a. What is classification? 1
- b. What do you mean by scientific name? 2
- c. In which class animal 'P' belongs to? Explain. 3
- d. Explain why these two animals belong to different classes. 4

Answer to Question No. 01 :

a Classification of animals or something is a system of arrangement in which one can know plant and animal kingdoms easily. Plants or animals are successively arranged in groups and sub-groups.

b Scientific name is the system of binomial nomenclature. The name is composed of two parts meaning two words. Both the words are Latin and are written in italics. The first word denotes genus and it starts with capital letter. The second word denotes species and it starts with small letter. In case of hand writing, names should be underlined. For example, the scientific name of humans is Homo sapiens.

c Animal P is a grasshopper. It belongs to class insecta of phylum Arthropoda. Clear, it is an insect. To explain the fact, I would mention the point first that it can fly. Its appendages are jointed or formed by many segments. Its Body is covered with a cuticle enriched substance called chitin. It has blood filled Body cavity named haemocoel. The Body is divisible into different regions namely head, thorax and abdomen of cephalothorax.

d Animal P is a grasshopper. It belongs to class insecta of phylum Arthropoda. Animal Q is a bird. It belongs to class aves of phylum Chordata. The similarities between the two animals are that both of them lay eggs and can fly. All other features are dissimilar to each-other. Animal P is cold blooded while animal Q is warm-blooded. Animal P's appendages are jointed or formed by many segments. This is not applicable in case of Q. P's Body is covered with a hard substance named chitin but Q's Body is covered with feathers. P has a large antenna on its head but Q does not have it.

Ques. 02 Rahat caught a mosquito just after being bitten. He examined its appendages, eye and body covering with the help of a magnifying glass. Then he tried to understand its systematic position in light of his textbook knowledge.

- In which phylum tape worm belongs to? 1
- Explain the position of notochord in human body. 2
- Based on Rahat's observation, explain the systematic position of the animal. 3
- Why is it important for Rahat to know the systematic position of the animal? Explain. 4

Answer to Question No. 02 :

- a Tape worm belongs to phylum Platyhelminthes.
 b Humans belong to phylum Chordata. They have notochord in the middle of the dorsal side of the body.
 c The animal that Rahat observed is a mosquito which belongs to class insecta of phylum Arthropoda. Clear, it is an insect. It can survive in

all forms of weather in almost all parts of the world. It is an external parasite in the sense that they suck blood from human and other animal bodies. It lays eggs and can fly. Its appendages are jointed or formed by segments. It has compound eyes and antenna on its head. Its body cavity is blood-filled and the body is divisible into different regions namely head, thorax and abdomen.

d Rahat needs to know the classifying state of the animal because of the following grounds :

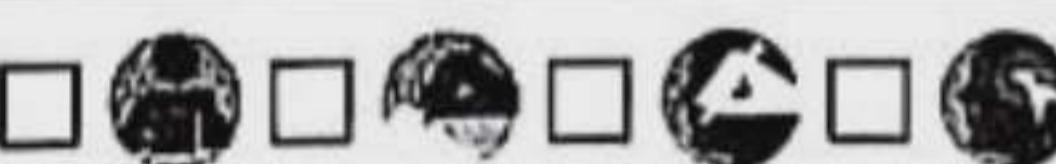
- Rahat will acquire knowledge about each group and sub-groups of the animal kingdom.
- He will be able to focus on the diversity of animal kingdom.
- He will be able to present all about the topic in a nutshell.
- He will be able to give a name to every unit.
- He will be able to identify the useful and harmful animals.



Multiple Choice Q/A



Designed as per topic



Lesson 1 : Classification of animal world

► Textbook Page 01

- How many animal species have been identified so far? (Knowledge)
 - (a) 15 million (b) 1.5 million
 - (c) 0.15 million (d) 0.015 million
- Which one of the following relates to the study of Biology? (Knowledge)
 - (a) Astronomy (b) Astrology
 - (c) Taxonomy (d) Toxicology
- What is the lowest stage of classification? (Knowledge)
 - (a) Order (b) Family (c) Genus (d) Species
- In case of classification, 'division' refers to —. (Knowledge)
 - (a) Family (b) Phylum (c) Order (d) Class

Read the following passage and answer the question numbers 5 and 6 :

It is impossible to identify millions of animals — from a unicellular microscopic animal to a gigantic sixty feet long whale. It is only possible by maintaining a certain method.

- Which of the following is the certain method? (Comprehension)
 - (a) Astrology (b) Astronomy
 - (c) Taxonomy (d) Embryology

- Binomial nomenclature includes —. (Application)
 - i. Genus
 - ii. Species
 - iii. Sub-phylum

Which one is correct?

- (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii

Lesson 2-5 : Classification of invertebrate animals

► Textbook Page 02

- Which phylum is divided into to different sub-kingdom? (Comprehension)
 - (a) Porifera (b) Platyhelminthes
 - (c) Protozoa (d) Mollusca
- What is the animals of phylum Porifera commonly known as? (Comprehension)
 - (a) Sponge (b) Spongilla
 - (a) (c) Aurelia (d) Euglena
- Most of the animals belonging to phylum Porifera are —. (Comprehension)
 - (a) Terrestrial animals (b) Arboreal animals
 - (c) Fresh water animals (d) Marine animals
- Which of the following animals are simplest in nature? (Knowledge)
 - (a) Butterfly (b) Spongilla
 - (c) Ant (d) Hydra
- Excretory organs —. (Comprehension)
 - i. coelom
 - ii. nephridia
 - iii. flame cell

Which one is correct? (Knowledge)

- (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii

- Animals belonging to phylum Porifera live in —. (Knowledge)
 - i. fresh water
 - ii. saline water
 - iii. polar regions

Which one is correct?

- (a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii



- 13. Porifera are —. (Higher Ability)**
- aquatic animals
 - multicellular but porous
 - devoid of well-formed tissue, organ and system
- Which one is correct?**
- d** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 14. Examples of Porifera —. (Knowledge)**
- tunicate
 - spongilla
 - scypha
- Which one is correct?**
- b** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 15. Animals belonging to the phylum Cnidaria —. (Comprehension)**
- can live in all weather conditions
 - live in colonies
 - are free living
- Which one is correct?**
- d** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- Coelenteron takes part in —. (Application)**
- digestion
 - circulation
 - reproduction
- Which one is correct?**
- a** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 17. Cnidoblast takes part in —. (Application)**
- locomotion
 - defense
 - hunting
- Which one is correct?**
- d** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 18. Features of Platyhelminthes —. (Higher Ability)**
- some of them are external parasites
 - some of them are internal parasites
 - some of them are free-living
- Which one is correct?**
- b** ① i & ii ② i, ii & iii ③ i & iii ④ ii & iii
- 19. Common features of Platyhelminthes —. (Comprehension)**
- they are flat-shaped
 - they are bisexual
 - they are internal parasites
- Which one is correct?**
- a** ① i, ii & iii ② i & ii ③ ii & iii ④ i & iii
- 20. Examples of Annelida —. (Application)**
- leech
 - earthworm
 - caterpillar
- Which one is correct?**
- d** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 21. Arthropods are found in —. (Higher Ability)**
- tropical zones
 - torrid zones
 - cold zones
- Which one is correct?**
- d** ① i & ii ② i & iii ③ ii & iii ④ i, ii & iii

- 22. Aquatic animals —. (Higher Ability)**
- porifers
 - cnidarians
 - echinodermatas
- Which one is correct?**
- d** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 23. Examples of Echinodermata —. (Application)**
- seagull
 - sea urchin
 - sea cucumber
- Which one is correct?**
- b** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- 24. Examples of Mollusca —. (Knowledge)**
- snail
 - cockroach
 - oyster
- Which one is correct?**
- c** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- Read the following passage and answer the question numbers 25 and 26 :**
- Some animals have brawny legs. One of them is snail. Its shell is a rich source of calcium.
- 25. What is the Body of these animals covered with? (Knowledge)**
- d** ① gelatin ② cuticle ③ chitin ④ mantle
- 26. These animals live in —. (Application)**
- saline water
 - fresh water
 - hills and forests
- Which one is correct?**
- b** ① i & ii ② i, ii & iii ③ i & iii ④ ii & iii
- Read the following passage and answer the question numbers 27 and 28 :**
- Some animals have cavities inside their bodies. They are of variegated colours, sizes and shapes. Their bodies are composed of a pair of embryonic cell layers.
- 27. What are the cavities called? (Comprehension)**
- a** ① Coelenteron ② Vacuole
③ Cnidoblast ④ Coelom
- 28. The cavity takes part in —. (Higher Ability)**
- circulation
 - respiration
 - digestion
- Which one is correct?**
- c** ① i & ii ② ii & iii ③ i & iii ④ i, ii & iii
- Look at the stem carefully and answer the questions No. 29 and 30 :**
- There is a largest phylum in the animal kingdom. In this phylum, they can survive everywhere on land, in fresh water and in brackish sea water. Many species of this phylum can fly with the help of wings. [JB '19]
- 29. In the above stem, which phylum is explained? (Knowledge)**
- d** ① Porifera ② Arthropoda
③ Cnildaria ④ Annelida

51. Which cell of Obelia takes part in locomotion, defense and capture of prey? (Comprehension) [BB '18]

- Ⓐ Flame cell Ⓑ Cnidoblast
Ⓑ Body Ⓒ Gland

52. Which is previously known as phylum coelenterata? (Knowledge) [DJB '18]

- Ⓐ Porifera Ⓑ Cnidaria
Ⓑ Nematoda Ⓒ Arthropoda

53. The sea cucumber of which phylum is? (Knowledge) [DJB '18]

- Ⓐ Nematoda Ⓑ Annelida
Ⓐ Plat�helminthes Ⓒ Echinodermata

54. Which one of the following is applicable for the phylum of cnidaria? (Comprehension) [DJB '17]

- i. They have coelenteron.
ii. They have endoblast in ectoderm.
iii. Their body consists of one embryonic layer.

Which one is correct?

- Ⓐ @ i & ii Ⓑ i & iii Ⓒ ii & iii Ⓓ i, ii & iii

Lesson 9 : Necessity of classification

► Textbook Page 10

55. Chordates are—. (Comprehension)

- i. aquatic
ii. arboreal
iii. terrestrial

Which one is correct?

- Ⓐ @ i & ii Ⓑ ii & iii Ⓒ i & iii Ⓓ i, ii & iii

56. Example of Cephalochordates—. (Knowledge)

- i. branchiostoma
ii. lancelet
iii. ascidia

Which one is correct?

- Ⓐ @ i & ii Ⓑ ii & iii Ⓒ i & iii Ⓓ i, ii & iii

■ Read the following passage and answer the question numbers 57 and 58 :

Hena is fond of rearing pigeons. She is also fond of nursing flower plants. Flocks of pigeons and bunches of flowers give her immense pleasure.

57. What species of animal is Hena herself? (Comprehension)

- Ⓐ @ aurita Ⓑ sapiens Ⓒ bubo Ⓓ indica

58. Special features of the class pigeons belong to—. (Higher Ability)

- i. warm-blooded animal
ii. jaw turns into beak
iii. have air pouch in the lung

Which one is correct?

- Ⓐ @ i & ii Ⓑ ii & iii Ⓒ i & iii Ⓓ i, ii & iii

59. Which of the following is called cold blooded animal? (Application) [Ctg.B.-'19]

- Ⓐ Toad Ⓑ Hilsafish
Ⓑ Wall lizard Ⓒ Crocodile

60. Which one is the characteristic of hen? (Higher Ability) [S.B.-'19]

- Ⓐ Cold blooded animal
Ⓑ Cartilaginous skeleton
Ⓒ Skin with glands Ⓒ It has beak

61. Which one is a cold-blooded animal?

(Higher Ability) [DB '18]

- Ⓐ Toad Ⓑ Wall lizard
Ⓑ Swan Ⓒ Magpie

62. Camel is an animal of which phylum? (Comprehension) [RB '18]

- Ⓐ Cnidaria Ⓑ Nematoda
Ⓒ Echinodermata Ⓒ Chordata

63. Which of the following has ganoid scales? (Comprehension) [JB '18]

- Ⓐ Shark Ⓑ Sword fish
Ⓒ Sea horse Ⓒ Hammer fish

64. Which of the following has four-chambered heart? (Comprehension) [JB '18]

- Ⓐ Duck Ⓑ Shark
Ⓑ Crocodile Ⓒ Camel

65. Which of the following is Chondrichthyes? (Comprehension) [CtgB '18]

- Ⓐ Ascidia Ⓑ Sea horse
Ⓒ Sword fish Ⓒ Petromyzon

66. The characteristics of mammals— (Comprehension) [RB '17]

- i. Cold blooded animal
ii. Female suckle their young on milk
iii. Four chambered heart

Which one is correct?

- Ⓐ @ i & ii Ⓑ i & iii Ⓒ ii & iii Ⓓ i, ii & iii

67. Which class man belongs to? (Knowledge) [DB '16]

- Ⓐ Amphibia Ⓑ Mammalia
Ⓑ Aves Ⓒ Reptilia

68. Which class man belongs to? (Knowledge) [DB '16]

- Ⓐ Amphibia Ⓑ Mammalia
Ⓑ Aves Ⓒ Reptilia

■ Read the following stem and answer the questions number 69 and 70 :

The vertebrate animals those can generally live under water in their early stage and breathe by gills as like fish but in mature stage they live in land is known as amphibian.

69. Which one of the following is amphibian? (Knowledge) [RB '16]

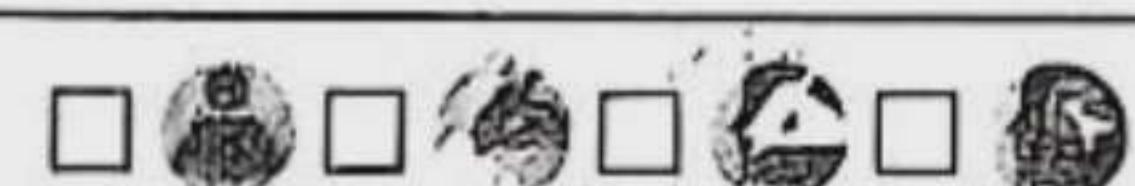
- Ⓐ Crocodile Ⓑ Snake
Ⓒ Frog Ⓒ Wall lizard

70. The characteristics of amphibian animals are—. (Comprehension) [RB '16]

- i. laying eggs in water
ii. skin thin and with many glands
iii. they are cold-blooded animals

Which one is correct?

- Ⓐ @ i & ii Ⓑ i & iii Ⓒ ii & iii Ⓓ i, ii & iii

**Short Q/A****Designed as per topic****Lesson 1: Classification of animal world**

► Textbook Page 01

Question 1. What is binomial nomenclature? Explain.

Ans. The scientific name of an animal contains two parts. This naming is called binomial nomenclature or scientific nomenclature. For example, the scientific name of a human is *Homo sapiens*. Scientific names must be in Latin or Latinized language or in English.

Question 2. What is meant by species?

Ans. Species is the lowest rank of the taxonomic unit. The naturalist Carolus Linnaeus was the first to identify the characteristics of the species. Each species is independent in its own characteristics. For example, man, toad, pigeon, etc. are separate species.

Lesson 2-5 : Classification of invertebrate animals

► Textbook Page 02

Question 3. What is sponge? Clarify.

Ans. The animals of the Porifera phylum are called sponges. Their body wall is full of numerous pores and through these pores, oxygen and food enter with the water.

Question 4. Write two characteristics of the sponge.

Ans. Two characteristics of the sponge are :

1. They are marine animals.
2. They live in colonies.

Question 5. Mention two general characteristics of the phylum Porifera.

Ans. Two general characteristics of the phylum Porifera are mentioned below :

1. Simplest multicellular animal.
2. Body wall with numerous pores.

Question 6. Write the names of two animals belonging to the phylum Porifera.

Ans. The names of two animals belonging to the phylum Porifera are : 1. *Spongilla* and 2. *Scypha*.

Question 7. Write two characteristics of the phylum Cnidaria.

Ans. Two characteristics of the phylum Cnidaria are :

1. The body consists of two embryonic layers.
2. Ectoderm bears a special type of cell called cnidocyte.

Question 8. What is meant by coelenteron?

Ans. The body cavity of the phylum Cnidaria is called coelenteron. It is found in the bodies of jellyfish, hydra, etc. Water circulates through it in the body. Which supplies nutrients and oxygen to the cells. It participates in digestion and circulation.

Question 9. What are cnidocytes? Explain.

Ans. Cnidocytes are special characteristic cells that appear in the ectoderm of animals of the phylum Cnidaria. These cells participate in hunting, self-defense, movement, etc.

Question 10. Write the names of two animals of the phylum Platyhelminthes.

Ans. Two animals of the phylum Platyhelminthes are : 1. *Fasciola* and 2. *Teania*.

Question 11. Write two characteristics of Teania.

Ans. Two characteristics of *Teania* are :

1. The body is covered with thick cuticles.
2. The body bears suckers and hooks.

Question 12. Write two examples of the phylum Nematoda.

Ans. Two examples of the phylum Nematoda are :

1. *Ascaris* and 2. *Filaria* worm.

Question 13. Write two general characteristics of the phylum Nematoda.

Ans. Two general characteristics of the phylum Nematoda are :

1. The body is tubular and covered with thick skin.
2. The alimentary canal is complete, mouth and anus are present.

Question 14. Write two differences between *Fasciola* and *Ascaris*.

Ans. Two differences between *Fasciola* and *Ascaris* are :

Fasciola	Ascaris
1. The body is flat and bisexual.	1. The body is tubular and unisexual.
2. The digestive system is incomplete.	2. The alimentary canal is complete.

Question 15. Write two characteristics of the phylum Annelida.

Ans. Two characteristics of the phylum Annelida are :

1. The body is tubular and segmented.
2. There is an excretory organ called nephridia.

Question 16. Write the names of two Annelida phylum animals.

Ans. Two animals belonging to the phylum Annelida are : 1. Earthworm and 2. Leech.

Question 17. Write two characteristics of the largest phylum of the animal world.

Ans. The largest phylum of the animal world is Arthropoda. Two characteristics of the phylum Arthropoda is given below :

1. The body is divided into three parts-head, thorax, and abdomen and has jointed appendages.
2. The soft body is covered with a hard chitinous exoskeleton.

Question 18. Write two characteristics of cockroach.

Ans. Two characteristics of cockroach are :

1. They are omnivores.
2. Their whole body is covered with a chitinous hard exoskeleton.

Question 19. Write two differences between coelom and Haemocoel.

Ans. Two differences between coelom and Haemocoel are :

Coelom	Haemocoel
1. The empty space between the alimentary canal and body wall of multicellular animals.	1. Blood-filled body cavity.
2. Does not transport nutrients.	2. Transports nutrients.

Question 20. Why is the earthworm called an animal of the phylum Annelida?

Ans. The earthworm's body is tubular and segmented. Each segment has setae that aid in locomotion. Nephridia are present as excretory organs. All these characteristics of earthworms are similar to the phylum Annelida, so earthworms are called animals of the phylum Annelida.

Question 21. Write two characteristics of the phylum Mollusca.

Ans. Two characteristics of the phylum Mollusca are :

1. The body is soft and usually covered with a hard shell.
2. They move with muscular legs.

Question 22. Give two examples of the phylum Echinodermata.

Ans. Two examples of the phylum Echinodermata are : 1. Starfish and 2. Sea cucumber.

► Lesson 6-8 : Classification of vertebrate animals

► Textbook Page 06

Question 23. Write two characteristics of the phylum Chordata.

Ans. Two characteristics of the phylum Chordata are :

1. Single, dorsal, tubular nerve cord remains present on the surface.
2. Animals of this phylum have notochord along the dorsal side throughout life or in the embryonic stage.

Question 24. How many sub-phyla of the phylum Chordata are there and what are they?

Ans. There are three sub-phyla of the phylum Chordata. Such as :

1. Urochordata, 2. Cephalochordata, and 3. Vertebrata.

Question 25. Where do the animals of the phylum Chordata live?

Ans. The animals of the phylum Chordata live in all environments of the world. Many of their species live on land. Among the aquatic Chordates,

many species live in freshwater or in the ocean. Many species are arboreal, desert dwellers, polar, cave dwellers, and flying. Apart from this, many animals of the phylum Chordata live attached to the bodies of other animals as ectoparasites.

Question 26. Write the names of two animals of the phylum Chordata.

Ans. The names of two animals of the phylum Chordata are : 1. Toad and 2. Man.

Question 27. Why is man called a Chordata phylum animal?

Ans. Man is called a Chordata phylum animal. Because, at some point in the human life cycle, there was a notochord along the dorsal side, which later turned into a backbone. They have a single, tubular nerve cord on the dorsal side. In other words, since human characteristics are similar to the phylum Chordata, humans are called animals of the phylum Chordata.

Question 28. Write two characteristics of the Urochordata sub-phylum.

Ans. Two characteristics of the Urochordata sub-phylum are :

1. In the early stage, there are gill slits and dorsal tubular nerve cord.
2. Only in the larval stage, they have a notochord in their tail.

Question 29. Explain the sub-phylum Cephalochordata.

Ans. Cephalochordata is a sub-phylum of the phylum Chordata. The presence of notochord can be seen throughout life in the body of animals of this sub-phylum. They look like fish. Example : *Branchiostoma*.

Question 30. Mention the classification of vertebrates.

Ans. Based on structure and characteristics, vertebrates have been divided into 7 classes. Those are :

1. Cyclostomata,
2. Chondrichthyes,
3. Osteichthyes,
4. Amphibians,
5. Reptiles,
6. Birds, and
7. Mammals.

Question 31. Write two differences between shark and hilsa fish.

Ans. Two differences between shark and hilsa fish are :

Shark	Hilsa
1. The body is covered with placoid scales.	1. The body is covered with cycloid and tenoid scales.
2. The tail is heterocercal.	2. The tail is homocercal.

Question 32. Why are members of the phylum Chordata called vertebrates?

Ans. Members of the phylum Chordata are called vertebrates because some of the main characteristics of the sub-phylum Vertebrata under the phylum Chordata are responsible for calling the members of the phylum Chordata vertebrates. The characteristics are :

1. The notochord is replaced by a cartilage or bone-made vertebral column.
2. The anterior part of the dorsal nerve cord transforms into the brain.

Question 33. All Chordata phylum animals are not vertebrates - explain.

Ans. All vertebrates belong to the phylum Chordata. Because, the animals of the phylum Chordata have a soft, rod-shaped, rigid, and unsegmented notochord along the dorsal side throughout life or in the embryonic stage. Only in the case of advanced Chordates is it replaced by a vertebral column. In other words, only advanced Chordata animals have a backbone, other Chordates with notochords do not have a backbone. That is why it is said that all vertebrates belong to the phylum Chordata, but not all Chordata phylum animals are vertebrates.

Question 34. Why are fish better than shrimp?

Ans. Fish are better than shrimp because shrimp do not have a notochord in their body but fish do. Fish have a heart which shrimp do not have. The body of the fish is covered with cycloid or tenoid scales but the body of the shrimp is covered with a hard shell made of chitin.

Question 35. Give an idea about sawfish.

Ans. Sawfish belong to the class Chondrichthyes. The skeletons of the fish of the class Chondrichthyes are made of cartilage. The mouth is located in the digital part of the body. The body is covered with placoid scales, there are 5-7 pairs of gill slits on both sides of the head. They do not have an operculum, the two parts of the tail are of different shapes, meaning heterocercal.

Question 36. Write two characteristics of the class Osteichthyes.

Ans. Two characteristics of the class Osteichthyes are :

1. The mouth is located at the front of the body.
2. The two parts of the tail are similar, meaning homocercal.

Question 37. Hilsa fish and sea horse are fish of the same class - explain.

Ans. Hilsa fish and sea horse are fish of the same class. Because the mouth of both fish is located at the front of the body. Both fish have four pairs of gills on both sides of the head and the gills are covered with operculum. Also, the tails of both fish are homocercal.

Question 38. Mention two general characteristics of amphibians.

Ans. Two general characteristics of amphibians are :

1. The skin is scaleless.
2. The skin is soft, thin, moist, and glandular.

Question 39. Write two characteristics of the class Reptilia.

Ans. Two characteristics of the class Reptilia are :

1. They move by crawling.
2. The skin is dry and scaly.

► Lesson 9 : Necessity of classification

► Textbook Page 10



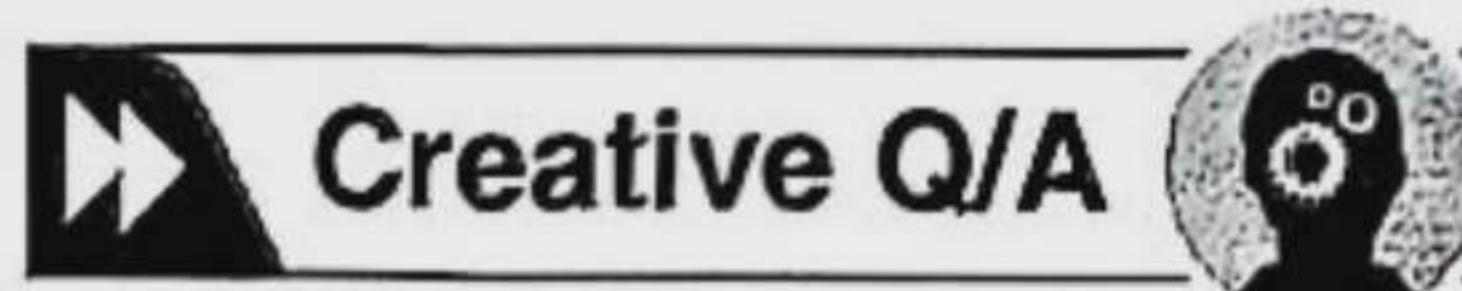
Question 40. How many steps of classification are there and what are they?

Ans. There are seven steps of classification. Those are : 1. Kingdom, 2. Phylum, 3. Class, 4. Order, 5. Family, 6. Genus, and 7. Species.

Question 41. Mention two importances of classification.

Ans. Two importances of classification are :

1. With the help of classification, knowledge about all the plants and animals of the world can be gathered easily, with little labor, and in a short time in a scientific way.
2. Various information and data on the interrelationship between animals can be obtained.



Designed as per learning outcomes



Ques. 01 Professor Syed Ali Ahsan, a prominent poet and writer, once went to Japan and met the great Nobel Laureate Yasunari Kawabata. One day they were sitting at a restaurant. Kawabata talked to the waiter in Japanese and ordered for bee soup. The soup was served. After finishing with it, Kawabata asked Ali Ahsan, "Do you know what you were taking so long?" Ali Ahsan replied, "Soup." Kawabata smilingly said, "Bee soup." Ali Ahsan got vomiting tendency.

- | | |
|--|---|
| a. What phylum do bees belong to? | 1 |
| b. Body shells of both crabs and oysters are hard. How are the shells different? | 2 |
| c. Represent a comparison between the phylum of bee and that of oyster. | 3 |
| d. "These phyla can play a vital role in the economy of Bangladesh." Evaluate the statement. | 4 |

Answer to Question No. 01 :

- a Bees belong to phylum Arthropoda.

b Body shells of both crabs and oysters are hard; still they are different in the sense that the Body shell of crabs is composed of chitin and that of oyster is composed of mantle, a rich source of calcium.

c Bee and oyster belong to phylum Arthropoda and Mollusca respectively. Their similarity lies in the point that they both have soft bodies with hard coverings. Other than this, they are completely different. Bee's Body is segmented having jointed limbs. Its Body is covered with cuticle enriched 'chitin'. On the other hand, oyster's Body is covered with calcium enriched 'mantle'. In the head of a bee, there is a pair of compound eyes and antenna but an oyster does not have any distinctive head at all. A bee has a blood-filled cavity named 'haemocoel' but there is no cavity in an oyster's Body. A bee has fine and segmented legs while an oyster has brawny foot on the ventral side of its Body for locomotion. A bee is capable of flying but an oyster is a slow-moving animal.

d I heartily support the statement that these phyla (Arthropoda and Mollusca) can play a vital role in the economy of Bangladesh. Honey-bees, crabs, shrimps, prawns and silkworm belong to the phylum Arthropoda while snails and oysters belong to phylum Mollusca.

We know, honey is a very beneficial food item. If we can do bee-keeping in a large scale, we will be able to have honey at a cheaper price and earn a lot by exporting it. Crabs are a popular dish in Japan, America and China. We have been earning foreign currency by exporting shrimps and prawns. It is necessary to expand their cultivation. Silk is a precious cloth. It is cultivated in a few parts of Rajshahi division. We need to expand its cultivation with a view to sell silk fabrics in the foreign market.

Many of our people are suffering from calcium deficiency which can be solved by cultivating snails and oysters because their shells are a rich source of calcium. We can also earn a huge amount of foreign currency by exporting those to the countries like Japan, Korea, Thailand, China, Taiwan and Singapore.

Ques. 02



A



B

- What sub-phylum do animals A and B belong to? 1
- Whales live in seas. Still they are not fish. Why? 2
- State how can you differentiate between the classes of A and B. 3
- "The rearing of mammals in a large scale can bring revolutionary change in our economy." — Evaluate the statement. 4

Answer to Question No. 02 :

a Animals A and B belong to sub-phylum vertebrata.
b No other aquatic animal but the whale lives on mother's milk. All the fishes lay eggs but whales give birth to their offsprings. Because of these reasons the whale is not a fish.

c A is a magpie belonging to class Aves while B is a rabbit belonging to class Mammalia. But both of them belong to the same class of Vertebrata and same phylum Chordata.

There are a number of differences between the two classes. Animals belonging to class Aves have their bodies covered with feather while that to Mammalia with fur or hair. Animal A is two-legged while animal B is four-legged. Almost all the Aves are arboreal but almost all the mammals are terrestrial. Aves lay eggs but mammals give birth to offsprings. Mammals have different types of teeth but aves have beaks without any tooth. Animal A has an air-pouch in its lung and so it can fly easily. Animal B does not have any air-pouch in its lung and it cannot fly. Mammals are breast-feeding animals but aves are not.

d I agree on the argument that the rearing of mammals in a large scale can bring a revolutionary change in our economy. Cows, goats, buffalos, sheep, etc. are domestic mammals. Once there was no rural family that had no domestic animal at all. They got a great portion of their protein requirement. Today, a single litre of dairy milk costs sixty taka. So, 60% people cannot even think of having a glass of milk per day. Besides, we have to spend a huge amount of money in order to import thousands of tons of powdered milk. We could save this huge amount if we reared cattle in large scale. We also could multiply our export earning several times by exporting several times of hide, leather and leather products than what we do today. We would also get more and more manure to use in our crop fields instead of spending a huge sum of money in buying chemical fertilizers from foreign countries. It would be environment-friendly and not cause harm to soil. We could also make manure-based bio-gas plants which would be a tremendous solution to the existing energy crisis.

Ques. 03 Look at the pictures below and answer to the following questions :



A



B



C

- What are the sub-phylum of Chordata? 1
- In what way animal 'B' helps a student? 2
- What classes do animals A, B and C belong to? Write two distinctive features for each class. 3
- "All the three animals can ensure tremendous benefit."— Justify the statement. 4

Answer to Question No. 03 :

- a** Chordata belongs to three sub-phylum namely Urochordata, Cephalochordata and Vertebrata.
- b** Animal B is a toad. Toad helps a student in gaining practical knowledge about different organs and systems of human Body. Its organs and system resemble the organs and systems of human Body at a large extent—especially digestive, circulatory and reproductive systems. Biology learners make experiments with toads all over the world.

- c** Animals A, B and C belong to classes Osteichthyes, Amphibia and Mammalia respectively.

Distinctive features of Osteichthyes :

- Most of them are fresh water fishes.
- Their bodies are covered with cycloid and ganoid scales

Distinctive features of Amphibia :

- Their skin is delicate, thin, moist and glandular.
- They lay eggs in water. There is tadpole phase in their life cycle.

Distinctive features of Mammalia :

- Youngs feed on mother's milk.
- Their heart is four-chambered.

d It is perfectly reasonable that all the three animals can ensure tremendous benefit. Hilsa is our national fish. But it is so costly today that only the rich can afford to have its taste. If proper steps can be implemented, their reproduction will increase. Besides it is very necessary to restrict force to stop fishing 'jatka'. Taking the above policy people of all walks will be able to have its taste. It will also bring a heap of foreign currency because it is a popular dish all over the world.

Frogs eat up harmful insects. Besides it can be exported at a good price to the countries of flat-nosed people, especially Thailand, Korea, Japan, etc. To speak about cow, it is the most useful animal in the world that ensures huge supply of protein, vitamins and minerals. Cow's milk is a complete food. It can reduce our import expenditures for million tons of milk powder and also of chemical fertilizer. Cowdung is an organic fertilizer. It does not cause any harm to soil or crops. We can enhance our export earnings by exporting its hide and leather products. Above all, the poverty-ridden people will be able to take a glass of milk at least once a day.

Ques. 04 During supper, Nuzhat noticed a curry of Hilsa fish on the dining table. At that time as there was no electricity, her elder sister, Orpa brought a candle. Suddenly an animal fell on the curtain beside the dining table. It had joint appendage and antenna. At this Nazhat became afraid.

- | | |
|--|---|
| a. What is binomial nomenclature? 1 | b. Why is crocodile called reptilia? 2 |
| c. Of which phylum is the animal that fell on the curtain as mentioned in the stem? Explain. 3 | d. Though the phylum of Nazhat and the fish used in the curry mentioned in the stem is the same they are not of the same class—Analyze. 4 |

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Answer to Question No. 04 :

- a** Scientific name of an animal contains two parts. The process of such naming is called binomial nomenclature.

b Crocodile is called reptilia because it possesses all the characteristics of class reptilia which are as follows :

1. Skin dry and with scales.
2. They move by crawling.
3. Each of the four legs contains five toes claws); absent in snakes and some lizards.

c The animal that fell on the curtain as mentioned in the stem is cockroach which belongs to phylum arthropoda. Characteristics of phylum arthropoda is given below—

- Body is segmented and joint appendages are present.
- Head bears a pair of compound eyes and antenna.
- Soft Body is covered with hard chitinous exoskeleton.
- Body cavity filled with blood and is known as haemocoel.

Cockroach possesses all of these characteristics. That's why they belong to phylum arthropoda.

d The phylum of Nuzhat and the fish used in the curry mentioned in the stem is the same that is chordata. But they are not of the same class. Human being belongs to the class mammalia for the following reasons—

- Body is covered with hair.
- Female mammal suckle their young on milk from mammary glands.
- Warm blooded animal
- Four chambered heart.
- Teeth heterodont (Varying in structure and function).
- All the mammal give birth to child. Example : Man, Camel, Royal Bengal Tiger. But there are some exception like Platypus.

On the other hand, Hilsa fish belongs to the class Osteichthyes for the following reasons—

- Mostly fresh water fish.
- Skin with cycloid, ctenoid or ganoid scales; some without scale.
- Respiration primarily by gills. Four pair of gills are present on both side of the head. Gills are covered by operculum.



Ques. 05

- a. What is called classification? 1
 b. Why crocodile is called reptilia? 2
 c. In which class animal 'X' belongs to? Explain. 3
 d. Though fig. 'Y' and 'Z' are the same kingdom but they stay in different phylum— Analyze with logic. 4

• Rajshahi Board 2019

Answer to Question No. 05 :

a Classification of animals or something is a system of arrangement in which one can know plant and animal kingdoms easily. Plants or animals are successively arranged in groups and sub-groups.

b Crocodile is called reptilia because it possesses all the characteristics of class reptilia which are as follows—

1. Skin dry and with scales.
2. They move by crawling.
3. Each of the four legs contains five toes (claws); absent in snakes and some lizards.

c Animal 'X' of the stem is toad. It belongs to class-Amphibia for the following characteristics—

1. Skin without scales.
2. Skin thin, soft, moist and with many glands. Amphibians are cold-blooded animals.
3. Lay eggs in water. A tadpole hatches from the fertilized egg.

d The animal of fig-'Y' is butterfly and that of fig - 'Z' is star fish. Though they are included in the same kingdom but stay in different phylum.

Butterfly belongs to phylum Arthropoda for the following characteristics—

- Body is segmented and joint appendages are present
- Head bears a pair of compound eyes and antenna.
- Soft Body is covered with hard chitinous exoskeleton.
- Body cavity filled with blood and is known as haemocoel.

Star fish belongs to phylum-Echinodermata for the following characteristics.

- Dermal skin bears spine.
- Body is divided into five equal parts (i. e. pentamerous).
- No distinct head, dorsal and ventral surface in adults.

Ques. 06

- a. What is called radial symmetry animals? 1
 b. Why the magpie can fly? 2
 c. Explain the characteristics of that phylum in which the animal of figure-A belongs to. 3
 d. In-between the two animals of figure B and Figure-C that they belongs to, which one is more developed? Analyze it. 4

• Jashore Board 2019

Answer to Question No. 06 :

a Radially symmetrical animals are those forms that can be divided into similar halves by more than two planes passing through one main axis. Example— star fish.

b The Magpie can fly because its Body is covered with feather. It has two wings, and air sacs with lungs which helps in flight.

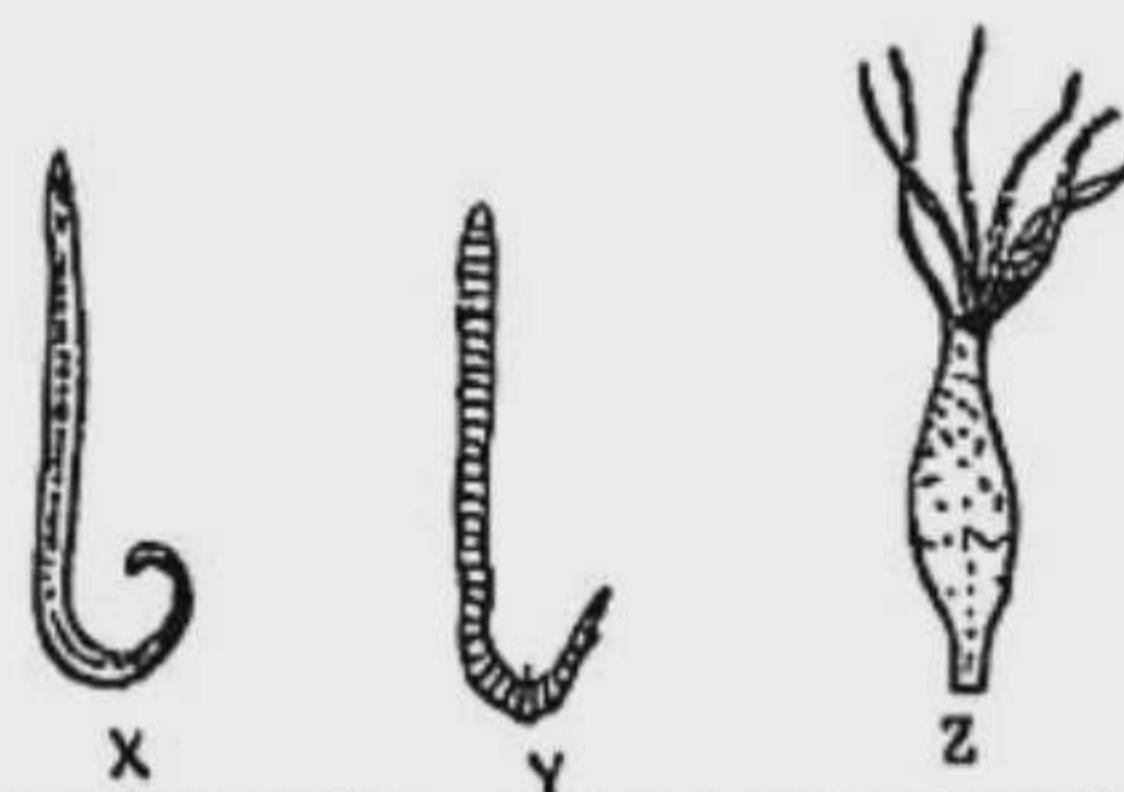
c The animal of fig-A is cockroach which belongs to phylum arthropoda. Characteristics of arthropoda :

- Body is segmented and joint appendages are present.
- Head bears a pair of compound eyes and antenna.
- Soft Body is covered with hard chitinous exoskeleton.
- Body cavity filled with blood and is known as haemocoel.

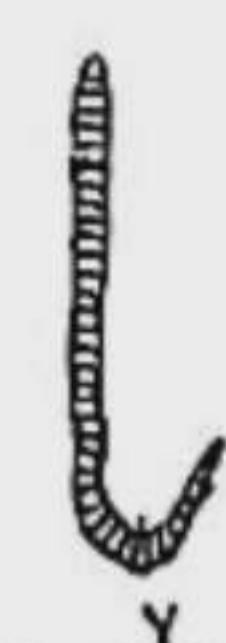
d The animal of fig : B is lizard which belongs to phylum-Chordata and animal of fig : C is snail which belongs to phylum-mollusca.

In between the two animals, lizard is more developed. Because lizard is a chordate animal and snail is a non-chordate animal. Chordate animals are more developed than non-chordate animals because of the following characteristics—

- The notochord is a rod-like unsegmented, semirigid structure. It forms a stiffening Body axis throughout life or at some stage in the life cycle of each chordate.
- Single, dorsal, tubular nerve cord present.
- Pharyngeal pouches (gill slits) present throughout life or at some stages in the life cycle.

Ques. 07

x



y



z

- a. What is coelenteron? 1
 b. Why is a snake called reptile? 2
 c. Explain the characteristics of the animal X. 3
 d. Between the two animals Y and Z which one is of developed phylum? Explain. 4

• Cumilla Board 2019

Answer to Question No. 07 :

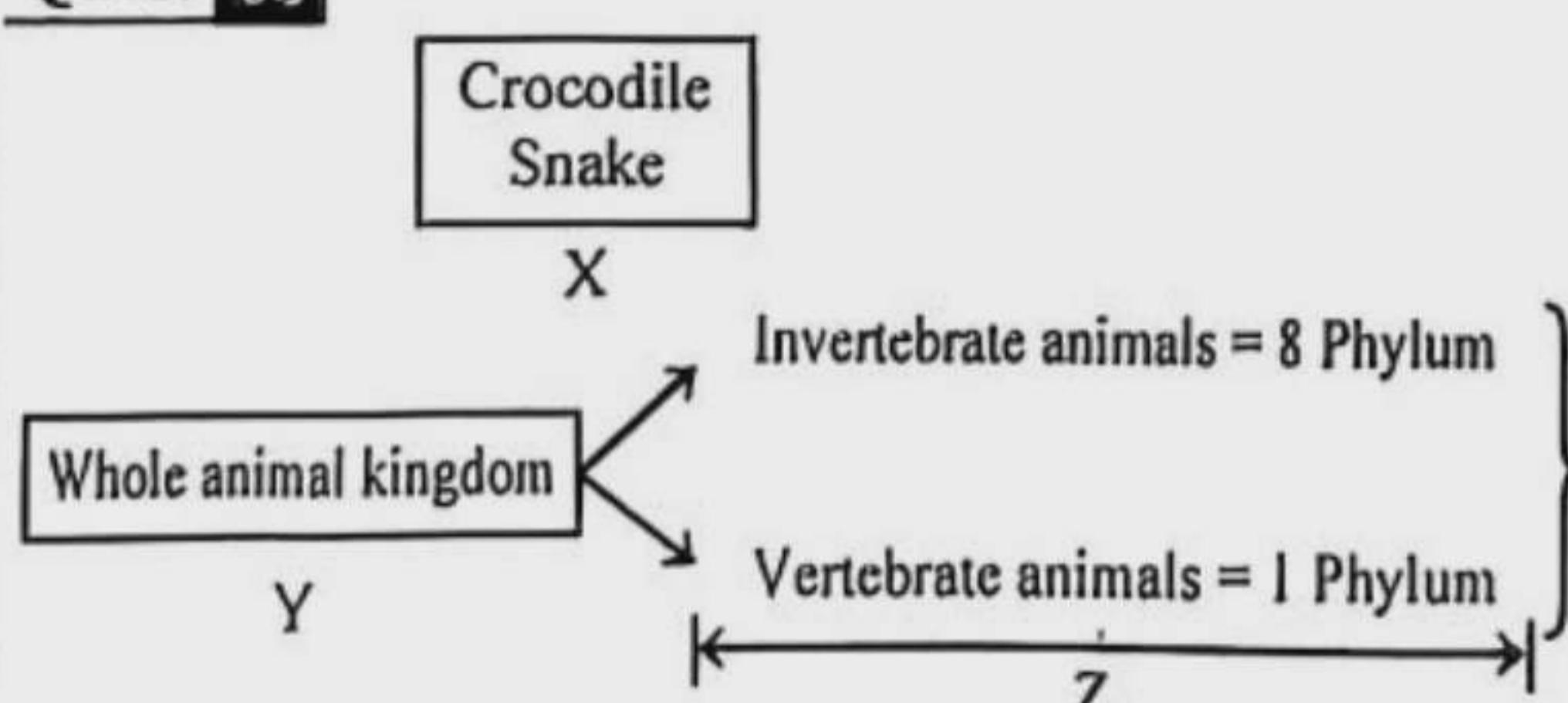
- a** Animals belong to phylum cnidaria have Body cavity. This Body cavity is known as coelenteron.
- b** Snake is called reptile because it possesses the general characteristics of the class-Reptilia. They have dry skin with scales. They move by crawling. Thus they are called reptiles.
- c** The animal 'X' of the stem is round worm. Characteristics of round worm is given below—
- Body tubular (cylindrical) and covered with thick skin.
 - Digestive system complete. Mouth and anus present.
 - Respiratory and circulatory system absent.
 - Generally unisexual.
 - Body cavity without lining and true coelom absent.
- d** The two animals 'Y' and 'Z' of the stem are earthworm and hydra respectively.

Earthworm belongs to phylum annelida and hydra belongs of phylum cnidaria. Between the two, annelida is developed than cnidaria. It is explained below—

The animals of Cnidaria phylum are diploblastic animals, that is their Body consists of two embryonic layers. The outer one is ectoderm and the inner one is endoderm. Their Body cavity is known as coelenteron. Ectoderm bears a special type of cells called cnidoblast. These cells help in locomotion, defense, capture of prey.

On the other hand, the animals of annelida phylum are triploblastic animal. segment contains setae that helps in locomotion. Nephridia present as excretory system.

Ques. 08



- a. What is called invertebrate animals? 1
 b. Why does frog live in water and on land? 2
 c. 'X' is included in a class—Explain. 3
 d. 'Z' is necessary to know 'Y'—Analyze. 4

• Chattogram Board 2019

Answer to Question No. 08 :

a Which animals do not have any vertebral column in any stage of their life are called invertebrate animals.

b Frog is an amphibious animal. They live in water and on land because they lay their eggs in water and these hatch into larvae which breathe by gills. Frogs live under water breathing through their skin, but when on land they breathe by lungs.

c 'X' of the stem are crocodile and snake which are reptiles. Both of them are included in class Reptilia for the following characteristics—

- Skin dry and with scales.
- They move by crawling.
- Each of the four legs contains five toes (claws); absent in snakes and some lizards.

d 'Z' of the stem indicates classification and 'Y' is whole animal kingdom. Classification of animals is a system of arrangement in groups and subgroups in which one can know animal kingdoms easily.

Classification is a scientific approach by which we can gather knowledge about different plants and animal easily. It saves labour, money and time. Classification is essential to identify any animal including the newly discovered one. Interrelationship between different animals can be determined with the help of classification. We can determine the systematic position of the organisms according to the evolutionary trend. Organisms can be arranged into different taxa by following definite rule. This also allows us to trace the affinity of one group of organism to other. It is useful to determine the collective and systematic knowledge about organisms. For example, all acellular (Unicellular) animals are grouped under one phylum and all multicellular animals under nine phylum.

So, 'Z' or classification is necessary to know 'Y' or whole animal kingdom.

Ques. 09



- a. What is coelenteron? 1
 b. Why sea cucumber is called radial symmetrical animal? Explain. 2
 c. Explain the characteristics of animal 'P'. 3
 d. Though the animals 'Q' and 'R' are belong to same sub-phylum but they are not belong to same class—why? Give logic. 4

• Sylhet Board 2019



Answer to Question No. 09 :

- a** Animals belong to phylum cnidaria have Body cavity. This Body cavity is known as coelenteron.
- b** When the organs of the Body is of such kind that it could be divided into many equal parts with different angles and with different axis, those animal are known as radial symmetrical animal. The Body of sea cucumber is such kind, that's why they are called radial symmetry animals.
- c** Animal 'P' of the stem is butterfly. It belongs to phylum Arthropoda. Characteristics of phylum arthropoda is given below—
- Body is segmented and joint appendages are present.
 - Head bears a pair of compound eyes and antenna.
 - Soft Body is covered with hard chitinous exoskeleton.
 - Body cavity filled with blood and is known as haemocoel

- d** The animal of 'Q' of the stem is lizard and the animal of 'R' is tiger. Both of them are chordate animal and belong to same sub-phylum vertebrata. But they are not belong to the same class. Lizard belongs to class Reptilia for the following characteristics—
- Skin dry and with scales.
 - They move by crawling.
 - Each of the four legs contains five toes claws); absent in snakes and some lizards.

On the other hand, tiger belongs to class mammalia for the following characteristics—

- Body covered with hair.
- Female mammal suckle their young on milk from mammary glands.
- Warm blooded animal
- Four Chambered heart.
- Teeth heterodont (Varying in structure and function).
- All the mammal give birth to child. Example : Man, Camel, Royal Bengal Tiger.

Ques. 10 In practical class sir shows some typical samples of Hammer fish, Ascidia, Petromyzon. After showing this animals sir said that there is a procedure to identify millions of other animals individually. This procedure is divided into seven steps.

- a. What is coelom? 1
- b. Why frog is called amphibian animal? 2
- c. Explain the systematic-position of the first two animals that mentioned in the stem. 3
- d. Evaluate the requirements of the procedure mentioned by sir. 4

Answer to Question No. 10 :

a The space filled with fluid between Body wall and the alimentary canal of multicellular animal is called coelom.

b Frog is called amphibia because it can live under water breathing through its skin, but when on land it breathe by lungs. It lays egg in water and this hatch into larvae which breathe by gills.

c The first two animals mentioned in the stem are Hammer fish and Ascidia.

Hammer fish belongs to class chondrichthyes for the following reasons—

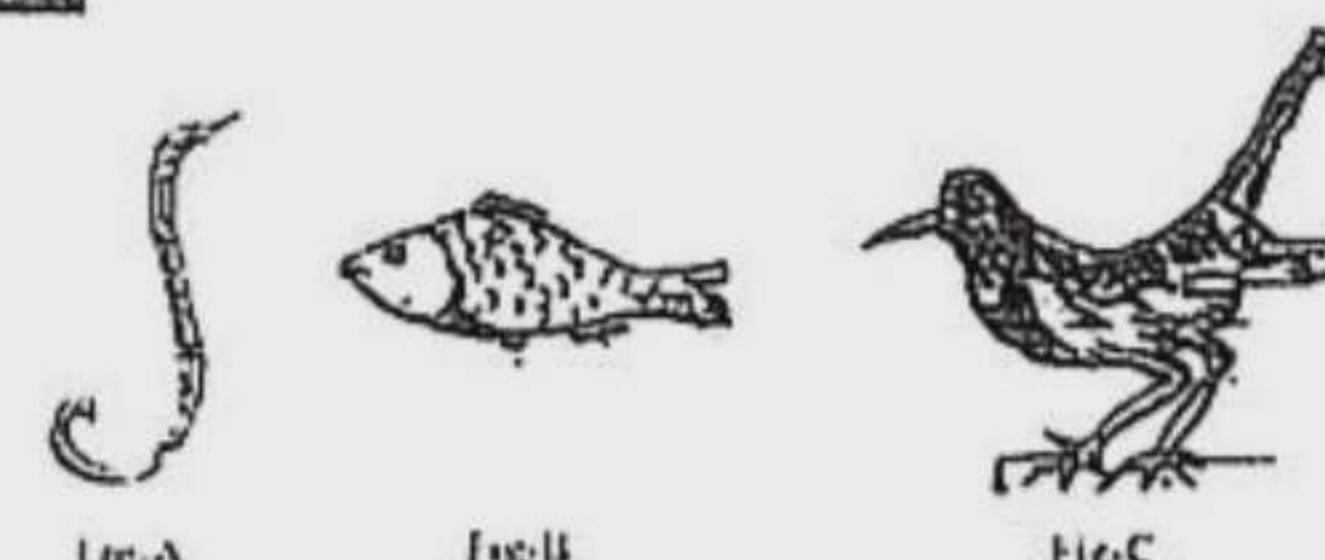
- (i) It is marine;
- (ii) It has cartilaginous skeleton'
- (iii) It has streamlined Body with heterocercal tail but no operculum.

Ascidia belongs to phylum chordata sub-phylum Urochordata for the following reasons :

- (i) Notochord present only larval stage and restricted to the tail.
- (ii) Gill slits and dorsal tubular nerve cord present only in the early stage of the life cycle.

d According to the stem, class teacher mentioned the classification of animal. The importance of classification is described below—

Classification is a scientific approach by which we can gather knowledge about different plants and animals easily. It saves labour, money and time. Classification is essential to identify any animal including the newly discovered one. Interrelationship between different animals can be determined with the help of classification. We can determine the systematic position of the organisms according to the evolutionary trend. Organisms can be arranged into different taxa by following definite rule. This also allows us to trace the affinity of one group of organism to other. It is useful to determine the collective and systematic knowledge about organisms. For example, all acellular (Unicellular) animals are grouped under one phylum and all multicellular animals under nine phylum.

Ques. 11

- a. What is classification? 1
- b. Explain the habitat of the largest phylum of the animal world. 2
- c. Explain the characteristics of fig-A of which the phylum belongs to. 3
- d. The animals in the Fig-B and C belong to the different class yet they are of the same phylum—Analyze. 4

Answer to Question No. 11 :

a Classification of animals or something is a system of arrangement in which one can know plant and animal kingdoms easily. Plants or animals are successively arranged in groups and sub-groups.

b Arthropoda is the largest phylum of the animal kingdom. They are extremely diverse group and occur in all habitat around the globe. Different species are adapted for life on land; in fresh, brackish and marine waters. Many species can fly with the help of wings. Some species live as parasite in (endoparasite) or on (ectoparasite) the bodies of plants and other animals.

c Fig-A of the stem is round worm. Round worm belongs to phylum—nematoda. General characteristics of phylum nematoda :

Body tubular (cylindrical) and covered with thick skin. Digestive system is complete. Mouth and anus present. Respiratory and circulatory system absent. Generally unisexual. Body cavity without lining and true coelom absent.

d The animal of fig-B is fish and fig-C is bird. Both of them are included in phylum chordata and both are vertebrate animal. But their characteristics have distributed them in different classes.

Fish belongs to class osteichthyes, because—
Skin with cycloid, ctenoid or ganoid scales; some without scale. Respiration primarily by gills. Four pair of gills are present on both side of the head. Gills are covered by operculum.

On the other hand, bird belongs to class Aves, on the following grounds :

- Their Body is covered with feather.
- They have two wings, two legs and one beak.
- The presence of air sacs with lung helps them fly.
- They are warm blooded.
- Their Bones are light, strong, delicate and pneumatic.

Evidently, their characteristics are different. That's why they are not in the same class.

Ques. 12

- | | |
|--|---|
| a. What is called binomial? | 1 |
| b. Why Frog is called amphibia? | 2 |
| c. Which phylum the figure-A belongs to—
Explain. | 3 |
| d. Are the animals belong to same phylum in
figure 'B' and figure 'C'? Give your opinion
with logic. | 4 |

Answer to Question No. 12 :

a Scientific name of an animal contains two parts. The process of such naming is called binomial.

b Frog is called amphibia because it can live under water breathing through its skin, but when on land it breathe by lungs. It lays egg in water and this hatch into larvae which breathe by gills.

c The figure A belongs to phylum-Cnidaria.

Habit and Habitat : Members of this phylum are present in almost all the regions of the world. They are mostly marine. Many species found in canals, beels, rivers, lakes, fountains, etc. They are diverse in shape, size and colour. Some species live alone while some of them live in groups forming colonies. They attach themselves to floating logs, leaves or other substance or move freely i.e. by free swimming.

General characteristics :

- Body consists of two embryonic layers. The outer one is ectoderm and the inner one is endoderm.
- Body cavity is known as coelenteron. It helps in digestion and circulation.
- Ectoderm bears a special type of cells called cnidoblast. These cells help in locomotion, defense, capture of prey.

d Figure-B of the stem is cockroach which belongs to phylum Arthropoda and figure- C is bird which belongs to phylum chordata and class Aves.

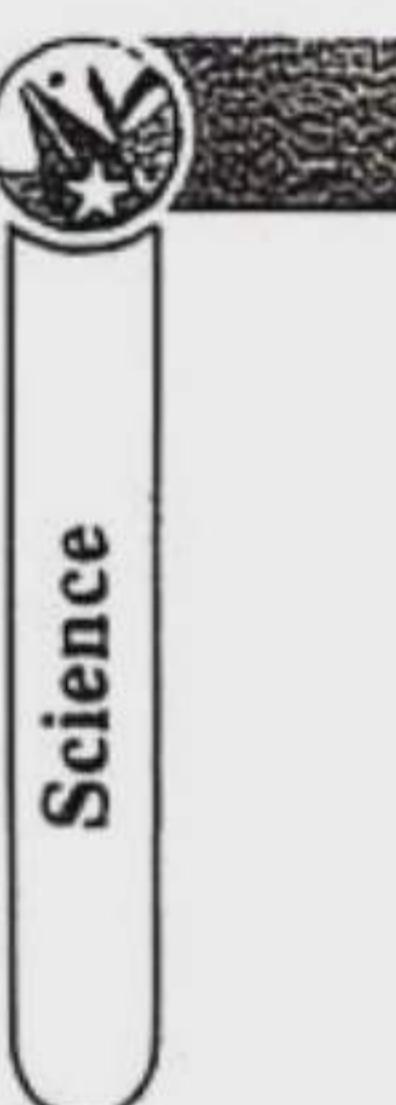
Cockroach belongs to phylum Arthropoda for the following characteristics :

- Body is segmented having joint appendages.
- Head bears a pair of compound eyes and antenna.
- Soft Body is covered with hard chitinous exoskeleton.
- Body cavity is filled with blood that is known as haemocoel.

Bird belongs to phylum chordata, class-Aves for the following characteristics :

- Their Body is covered with feather.
- They have two wings, two legs and one beak.
- The presence of air sacs with lung helps them fly.
- They are warm blooded.
- Their Bones are light, strong, delicate and pneumatic.

So, the animals of fig-B and fig-C are not included in the same phylum.



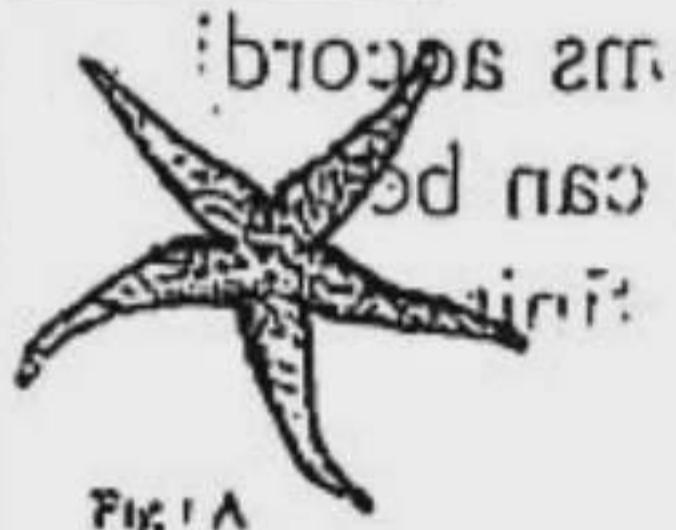
Ques. 13

Fig : A



Fig : B



Fig : C

- a. What is classification? 1
- b. Why can the Magpie fly? Explain. 2
- c. In which phylum does figure-A belong to? Explain. 3
- d. In both the figures B and C, the animals are in the same phylum though they are of different classes. Analyse. 4

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Answer to Question No. 13 :

- a** Classification of animals or plants is a system of arrangement in which one can know plant and animal kingdom easily. Plants or animals are successively arranged in groups and sub-groups.
- b** The magpie can fly because its Body is covered with feather. It has two wings, and air sacs with lungs which helps them fly.

- c** Figure A of the stem is starfish which belongs to phylum Echinodermata.

Habit and habitat: Echinoderms are all marine. They live in all oceans of the world and at all depths. None of the members is found on land and in fresh water. They are mostly free-living.

General characteristics :

- Dermal skin bears spine.
- Body is divided into five equal parts (pentamerous).
- There is no distinct head, dorsal or ventral surface in adults.

- d** Both the figures B and C belong to phylum chordata and sub-phylum vertebrata. But they are of different classes.

Figure B is toad which belongs to class Amphibia. These animals can live in water by breathing through their skin, but when on land they breathe by lungs. They lay eggs in water and they hatch into larvae which breathe by gills.

Toad belongs to class Amphibia for the following characteristics :

- Skin without scales.
- Skin is thin, soft and moist having many glands.
- They are cold-blooded animals.
- They lay eggs in water. A tadpole hatches from a fertilized egg.

Figure C is tiger which belongs to class Mammalia.

Tiger belongs to class Mammalia for the following characteristics :

- Body is covered with hair.
- Female mammals suckle their young on milk from mammary glands.
- They are warm blooded animal.
- They have four chambered heart.
- Their teeth are heterodont (Varying in structure and function).
- All the mammals give birth to childs.

Ques. 14 In order to give conception of the animal kingdom the science teacher drew the following pictures and said, "To know the animal kingdom its systematic arrangement is a must."

Fig : 1



Fig : 2

- a. What is binomial naming? 1
- b. Why does mussel belong to phylum mollusca? 2
- c. Explain the dissimilarities between picture-1 and picture-2. 3
- d. Evaluate the genuineness of the statement of the science teacher. 4

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Answer to Question No. 14 :

- a** Scientific name of an animal contains two parts. The process of such naming is called binomial naming.

- b** Mussel belongs to phylum-mollusca, because it possesses the following characteristics—

- Soft Body, usually covered with hard shell.
- Muscular foot used for locomotion.
- Gaseous exchange (respiration) takes place by lungs or gills.

- c** Dissimilarities between picture-1 and picture-2 :

- i. The animal of picture-1 is prawn and picture-2 is fish.
- ii. Prawn belongs to phylum Arthropoda and fish belongs to phylum chordata.
- iii. Prawn is a non-chordate animal, on the other hand, fish is a chordate animal.
- iv. In case of prawn, Body segmented with joint appendages. In opposite, Body of fish is not segmented.
- v. A prawn's Body is covered with hard chitinous exoskeleton. But fish Body is covered with scale.
- vi. Hemocoel (Body cavity filled with blood) is present in prawn, but absent in fish.

Q The statement of the science teacher was- "To know the animal kingdom its systematic arrangement is a must". Systematic arrangement of animals or plants is called classification.

Classification is a scientific approach by which we can gather knowledge about different plants and animals easily. It saves labour, money and time. Classification is essential to identify any animal including the newly discovered one. Interrelationship among different animals can be determined with

the help of classification. We can determine the systematic position of the organisms according to the evolutionary trend. Organisms can be arranged into different taxa by following definite rule. This also allows us to trace the affinity of one group of organism to other. It is useful to determine the collective and planned knowledge about organisms. For example, all acellular (Unicellular) animals are grouped under one phylum and all multicellular animals under nine phyla.

Knowledge & Comprehension-based Q/A

Preparatory Knowledge-based Q/A

Question 1. What phylum do bees belong to?

Ans. Bees belong to phylum Arthropoda.

Question 2. What sub-phylum do magpie and rabbit belong to?

Ans. Magpie and rabbit belong to sub-phylum vertebrata.

Question 3. What are the sub-phylum of Chordata?

Ans. Chordata belongs to three sub-phylum namely Urochordata, Cephalochordata and Vertebrata.

Question 4. What is binomial nomenclature?

[DB, MB '19; BB '18; CB '18; RB '17]

Ans. Scientific name of an animal contains two parts. The process of such naming is called binomial nomenclature.

Question 5. What is called classification?

[RB '19; DB '18; RB '18; CtG B '18]

Ans. Classification of animals or something is a system of arrangement in which one can know plant and animal kingdoms easily. Plants or animals are successively arranged in groups and sub-groups.

Question 6. What is called radial symmetry animals? [JB '19; BB '17]

Ans. Radially symmetrical animals are those forms that can be divided into similar halves by more than two planes passing through one main axis. Example- star fish.

Question 7. What is coelenteron? [CB '19; SB '19; JB '18]

Ans. Animals belong to phylum cnidaria have Body cavity. This Body cavity is known as coelenteron.

Designed as per topic 

Question 8. What is called invertebrate animals? [CtgB '19]

Ans. Which animals do not have any vertebral column in any stage of their life are called invertebrate animals.

Question 9. What is haemocoel? [BB '19]

Ans. Haemocoel is a body cavity filled with blood and acts as a part of circulatory system.

Question 10. What is coelom? [DjB '19, '18; SB '18]

Ans. The space filled with fluid between body wall and the alimentary canal of multicellular animal is called coelom.

Question 11. In which phylum does spongilla include? [DB '17]

Ans. Spongilla includes in Phylum-Porifera.

Question 12. What is the scientific name of human? [CB '17; JB '17; DjB '17; JB, DjB '16]

Ans. The scientific name of human is Homo Sapiens.

Preparatory Comprehension-based Q/A

Question 1. What is taxonomy?

Ans. The scientific process of classifying things is known as taxonomy. In order to classify living world, there is a taxonomic unit as a separate branch of biology. Naturalist Carolus Linnaeus is called the father of taxonomy.

Question 2. What are the nine phyla of the kingdom animalia?

Ans. The nine phyla of kingdom animalia are :

- | | |
|----------------------|--------------------|
| (a) Porifera; | (b) Cnidaria; |
| (c) Platyhelminthes; | (d) Nematoda; |
| (e) Annelida; | (f) Arthropoda; |
| (g) Mollusca; | (h) Echinodermata; |
| (i) Chordata. | |

Question 3. What are the general characteristic of the class Reptilia?

Ans. The general characteristics of reptilia are —

- They are of skin dry and with scales.
- They move by crawling.
- They are of paired limbs, usually with five toes.

Question 4. What is the necessity of classification of living world?

Ans. The necessity of classification of living world is untold. It is essential to identify animals including the newly discovered one. Interrelationship between different animals can be determined with the help of classification. It is useful to determine the collective and planned knowledge about organisms.

Question 5. Which is the largest phylum of the animal kingdom and what are the harmful insects known as?

Ans. The largest phylum of the animal kingdom is arthropoda. The harmful insects under arthropoda are known as pest.

Question 6. What are the main characteristics of mammalia?

Ans. The main characteristics of mammalia are —

- They are warm-blooded animal with the body covered with hair.
- Female mammal suckle their young on milk from mammary glands.
- With a few exceptions all give birth to child with four chambered heart.

Question 7. Why bird can fly? Explain. [BB '19]

Ans. The Body of bird is covered with feather. It has two wings and Bones which are light and strong, delicate and pneumatic. The presence of air sacs with lung helps in flight.

Question 8. Why frog is called amphibian animal? [DJB '19; JB, CB '18]

Ans. Frog is called amphibia because it can live under water breathing through its skin, but when on land it breathe by lungs. It lays egg in water and this hatch into larvae which breathe by gills.

Question 9. Why is scypha called sponge? — Explain. [MB '19]

Ans. Scypha is called sponge because it belongs to phylum porifera. Animals of this phylum are simplest multicellular and their body wall contain numerous pores. Through these pores food and oxygen enter into the body.

Question 10. Explain the habitat of the largest phylum of the animal world. [DB '18]

Ans. Arthropoda is the largest phylum of the animal kingdom. They are extremely diverse group and occur in all habitat around the globe. Different species are adapted for life on land; in fresh, brackish and marine waters. Many species can fly with the help of wings. Some species live as parasite in (endoparasite) or on (ectoparasite) the bodies of plants and other animals.

Question 11. Why lizard is called reptiles? [RB '18]

Ans. Lizard is called a reptile because it exhibits the general characteristics of the class-Reptilia. They have dry skin with scales. They move by crawling and they have paired limbs usually with five toes. Thus they are called reptiles.

Question 12. Why can the Magpie fly? Explain.

[CtgB '18]

Ans. The magpie can fly because its Body is covered with feather. It has two wings, and air sacs with lungs which helps them fly.

Question 13. Write down the importance of classification. [SB '18; RB '17]

Ans. Classification is a scientific approach by which we can gather knowledge about different plants and animals easily. It saves labour, money and time. Classification is essential to identify any animal including the newly discovered one. Interrelationship between different animals can be determined by means of classification.

So, classification is of high importance.

Question 14. Why does mussel belong to phylum mollusca? [BB '18]

Ans. Mussel belongs to phylum-mollusca, because it possesses the following characteristics—

- Soft body, usually covered with hard shell.
- Muscular foot used for locomotion.
- Gaseous exchange (respiration) takes place by lungs or gills.

Question 15. Why hen is include in aves? [DJB '18]

Ans. Hen is included in Aves, because it possesses the following characteristics of aves :

- Their body is covered with feather.
- They have two wings, two legs and one beak.
- The presence of air sacs with lung helps them fly.
- They are warm blooded.
- Their Bones are light, strong, delicate and pneumatic.

Question 16. What do you mean by the binomial nomenclature? [DB '17]

Ans. The scientific name of an animal contains two parts defining genus and species. Carolus Linnaeus, a naturalist and the father of taxonomy at first introduced binomial nomenclature in the naming of animals. The process of naming of an animal by defining genus and species is called binomial nomenclature.

Question 17. What do you mean by Amphibia?

Explain. [CB '17]

Ans. Animals living simultaneously in water and in land are called amphibia. These animals can live

under water breathing through their skin but when on land, they breathe by lungs. For example— toad, frog.

Question 18. Cnidoblast is a cell with the characteristics of hydra. Explain. [CgB '17]

Ans. Hydra is an aquatic animal belonging to the phylum-cnidaria. They attach themselves to floating logs, leaves or other objects or move freely. Their body consists of two embryonic layers, the outer one is ectoderm and the inner wall is endoderm.

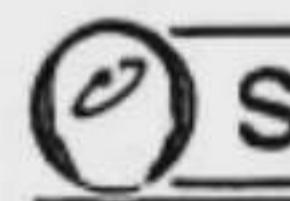
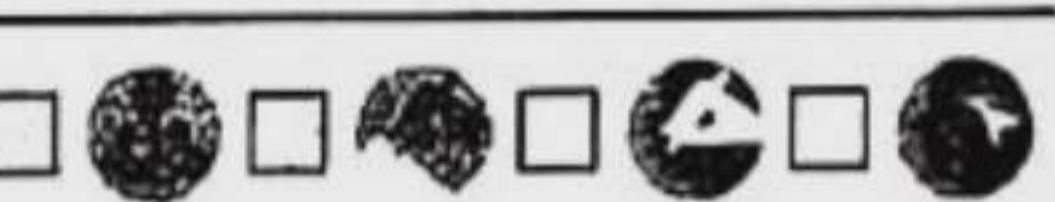
Ectoderm of Hydra bears a special type of cells called cnidoblast cell. These cells help in locomotion, defense, and capture of prey.



Solutions to Textual Activities



Along with textual reference



Solutions to Activities of Exercise

Task 01 Collect some vertebrate animals from your environment/locality and write down their characteristics. ► Textbook Page 13

Solution : I live in a rural environment. From this environment, I collected some vertebrate animals such as dogs, cats, cows, goats, rui fish, puti fish, ducks, roosters, etc.. and observed and recorded the following characteristics:

Dogs, cats, cows, and goats:

1. Their bodies are covered with hair/fur.
2. They all give birth to babies and the babies grow up drinking breast milk.
3. They are warm-blooded animals.
4. There are different types of teeth in the jaw.

Rui fish and puti fish:

1. They are freshwater fish.
2. The body is covered with both cycloid and tenoid scales.
3. They have four pairs of gills on both sides of the head, the gills are covered with operculum.
4. They breathe through gills.

Ducks and roosters:

1. Their bodies are covered with feathers.
2. The front two legs have turned into wings and the jaw into a beak.
3. They can fly easily due to the presence of air sacs with the lungs.
4. They are warm-blooded animals.

Their bones are strong, light, and hollow.

Task 02 Mention the phylum of the following animals—earthworm, prawn, grasshopper, snail, mussel, rui fish and magpie-robin (Doel). Make a list of their identifying characteristics. ► Textbook Page 13

Solution : I have written down the phylum and identifying characteristics of earthworms, prawns, grasshoppers, snails, mussels, magpie-robin, and rui fish in the table below:

Animal	Phylum	Identifying characteristics
Prawn, Grasshopper	Arthropoda	<ol style="list-style-type: none"> 1. The body is segmented and has jointed appendages. 2. The head has a pair of compound eyes and antennae. 3. The soft body is covered with a hard exoskeleton rich in chitin. 4. The blood-filled cavity of their body is known as the Haemocoel.
Earthworm	Annelida	<ol style="list-style-type: none"> 1. The body is tubular and segmented. 2. There is an excretory organ called nephridia. 3. Each segment has setae. Seta helps in locomotion.
Snail, Mussel	Mollusca	<ol style="list-style-type: none"> 1. The body is soft and is usually covered with a hard shell. 2. They move with muscular legs. 3. Respiration is done by lungs or gills.
Magpie-robin	Chordata (Birds)	<ol style="list-style-type: none"> 1. The body is covered with feathers. 2. The front two legs have turned into wings and the jaw into a beak. 3. They are warm-blooded animals. 4. They can fly easily due to the presence of air sacs with the lungs.



Science

Animal	Phylum	Identifying characteristics
Rui fish	Bony Chordata (Osteichthyes)	1. Their habitat is in freshwater. 2. The body is covered with both cycloid and tenoid scales. 3. They breathe through gills.

② Solutions to Topic Related Activity □

Task 03 Collect Loitta, Rupchanda, Poa, Coral, Pabda, Shing (cat fish), and Magur (cat fish). In which class do they belong? Identify their characteristics. ► Textbook Page 08

Solution : I have collected Loitta, Rupchanda, Poa, Coral, Pabda, Shing (cat fish), and Magur (cat fish) and classified them according to their characteristics which is as follows :

Loitta, Rupchanda, Poa, and Coral fish belong to the class Chondrichthyes.

Characteristics :

1. They live in the sea.
2. The skeleton is cartilaginous.
3. Their bodies are covered with placoid scales.
4. There are 5-7 pairs of gill slits on both sides of the head.

Pabda, Shing (cat fish), and Magur (cat fish) fish belong to the class Osteichthyes.

Characteristics :

1. They are freshwater fish.
2. The body is covered with both cycloid and tenoid scales.

There are four pairs of gills on both sides of the head. The gills are covered by the operculum. They breathe through gills.

Task 04 Make a group of five. Now, observe the chart of vertebrate and invertebrate animals; identify and note down their characteristics. Now present it to your class. Match the similarity of your findings with those of the other groups. ► Textbook Page 09

Solution : As per the teacher's instructions, we students divided ourselves into groups of five. Now we identify and write down the characteristics of vertebrate and invertebrate animals from the chart shown by the teacher. Now all the group students sit together and compare the characteristics written by our group. The characteristics presented in the class are :

Vertebrate animals :

1. They have a backbone in their body.
2. The spinal cord is hollow and located on the dorsal side of the body.
3. The heart is located on the ventral side of the body.
4. Hemoglobin is present inside the red blood cells.
5. Gill slits are present in the embryonic or adult stage.
6. Lizards, birds, bats, humans, whales, etc. are vertebrate animals.

Invertebrate animals :

1. There is no backbone or notochord at any stage of life.
2. There is no spinal cord.

Hydra, earthworm, leech, worm, snail, butterfly, etc. are invertebrate animals.



Super Suggestions



Super Suggestions with 100% preparatory questions selected by the Master Trainer Panel

Dear learners, important multiple choice, short, creative, knowledge & comprehension-based questions of this chapter selected by Master Trainer Panel for Half-Yearly and Annual Exams are presented below. Learn the answers to the mentioned questions well to ensure 100% preparation.

Question Pattern	7★	5★
MCQs with Answers	Learn each MCQs in this chapter thoroughly.	
Short Q/A	1, 3, 5, 7, 11, 20, 25, 30, 35, 38	2, 4, 6, 8, 10, 14, 18, 20, 23, 28, 31
Creative Q/A	2, 4, 6, 8, 10, 12	3, 5, 7, 9, 11, 13
Knowledge-based Q/A	1, 5, 9, 11	3, 5, 8, 10
Comprehension-based Q/A	2, 4, 6, 8, 9, 12, 14	1, 3, 5, 7, 10, 13

Exclusive Tips ► Master the solutions to all the activities in this chapter along with exercise and other Q/A to develop the creative thinking and assess your talent.



Assessment & Evaluation



A question bank presented in the form
of a class test to assess the preparation

Class Test

Time : 3 hours

Science

Class : Eight

Full marks : 100

Multiple Choice Questions (Each question carries 1 mark)

$1 \times 30 = 30$

[N.B. : Answer all the questions. Each question carries one mark. Block fully, with a ball-point pen, the circle of the letter that stands for the correct/best answer in the "Answer Sheet" for Multiple Choice Question Type Examination.]

1. How many animal species have been identified so far?
 A 15 million B 1.5 million
 C 0.15 million D 0.015 million
2. What is the lowest stage of classification?
 A Order B Family C Genus D Species
3. In case of classification, 'division' refers to —.
 A Family B Phylum C Order D Class
4. Which phylum is divided into different sub-kingdom?
 A Porifera B Platyhelminthes
 C Protozoa D Mollusca
5. Most of the animals belonging to phylum Porifera are —.
 A Terrestrial animals B Arboreal animals
 C Fresh water animals D Marine animals
6. Which of the following animals are simplest in nature?
 A Butterfly B Spongilla C Ant D Hydra
7. Excretory organs —.
 i. coelom
 ii. nephridia
 iii. flame cell
 Which one is correct?
 A i & ii B ii & iii C i & iii D i, ii & iii
- Read the following passage and answer the question numbers 8 and 9 :
 Some animals have brawny legs. One of them is snail. Its shell is a rich source of calcium.
8. What is the body of these animals covered with?
 A gelatin B cuticle C chitin D mantle
9. These animals live in —.
 i. saline water
 ii. fresh water
 iii. hills and forests
 Which one is correct?
 A i & ii B i, ii & iii C i & iii D ii & iii
10. In the body of which animal is there a cell with special characteristics named Cnidoblast?
 A Hydra B Scypha C Mussels D Cockroach
11. The animal of which phylum has haemocoel?
 A Nematoda B Annelida
 C Arthropoda D Mollusca
12. Leech belongs to which phylum?
 A Cnidaria B Nematoda C Annelida D Mollusca
13. Which is the largest phylum in animal kingdom?
 A Porifera B Mollusca C Arthropoda D Chordata
14. Which phylum does Obelia belong to?
 A Cnidaria B Platyhelminthes
 C Nematoda D Annelida
15. Which one is from the phylum Annelida?
 A Butterfly B Round worm
 C Leech D Crab
16. Which cells help in the activities like capture of prey, defense, locomotion?
 A Flame B Cnidoblast C Body D Gland

17. Which animal has haemocoel?
 A Hilsha B Pabda C Shark D Prawn
18. Which of the following absorbs ions?
 A Rock salt B Water
 C Carbohydrate D Zilletine
19. How many phylum of invertebrate animal?
 A 3 B 7 C 8 D 9
20. Which one discharge wastage with the organ nephridia?
 A Earthworm B Cockroach
 C Round worm D Hydra
21. The animals of which phylum have numerous pores?
 A Porifera B Cnidaria
 C Nematoda D Arthropoda
- Answer questions number 22 and 23 from the following stem :
 The ectoderm of the animals of Cnidaria phylum bears a special type of cells called cnidoblast. These cells participate in different functions.
22. Which of the following animal belongs to the above phylum?
 A Spongilla B Scypha C Obelia D Star fish
23. The special type of cell participate in —.
 i. capture of prey
 ii. defence
 iii. circulation
 Which one of the following is correct?
 A i & ii B i & iii C ii & iii D i, ii & iii
24. The gaseous exchange of the animals of which phylum takes place by lungs?
 A Mollusca B Porifera C Cnidaria D Nematoda
25. Which cell of Obelia takes part in locomotion, defense and capture of prey?
 A Flame cell B Cnidoblast
 C Body D Gland
26. Which one is a cold-blooded animal?
 A Toad B Wall lizard C Swan D Magpie
27. Example of Cephalochordates —.
 i. branchiostoma
 ii. lancelet
 iii. ascidia
 Which one is correct?
 A i & ii B ii & iii C i & iii D i, ii & iii
28. Which of the following has ganoid scales?
 A Shark B Sword fish
 C Sea horse D Hammer fish
29. Which of the following has four-chambered heart?
 A Duck B Shark C Crocodile D Camel
30. Which of the following is Chondrichthyes?
 A Ascidia B Sea horse
 C Sword fish D Petromyzon

Answer Sheet ▶ Multiple Choice Questions

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>	5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>	9	<input type="radio"/>	10	<input type="radio"/>	11	<input type="radio"/>	12	<input type="radio"/>	13	<input type="radio"/>	14	<input type="radio"/>	15	<input type="radio"/>
16	<input type="radio"/>	17	<input type="radio"/>	18	<input type="radio"/>	19	<input type="radio"/>	20	<input type="radio"/>	21	<input type="radio"/>	22	<input type="radio"/>	23	<input type="radio"/>	24	<input type="radio"/>	25	<input type="radio"/>	26	<input type="radio"/>	27	<input type="radio"/>	28	<input type="radio"/>	29	<input type="radio"/>	30	<input type="radio"/>

Science

Short-Answer Question (Each question carries 2 marks)**Answer any 10 of the following questions :**

1. What is meant by species?
2. What is sponge? Clarify.
3. Mention two general characteristics of the phylum Porifera.
4. Write two characteristics of the phylum Cnidaria.
5. What is meant by coelenteron?
6. Write the names of two animals of the phylum Platyhelminthes.
7. Write two general characteristics of the phylum Nematoda.

8. Write two characteristics of the phylum Annelida.
9. Write two characteristics of cockroach.
10. Write two characteristics of the phylum Mollusca.
11. Write two characteristics of the phylum Chordata.
12. Why is man called a Chordata phylum animal?
13. Mention the classification of vertebrates.
14. Give an idea about sawfish.
15. How many steps of classification are there and what are they?

Creative Question (Each question carries 10 marks)**Answer any 5 of the following questions :**

1. Professor Syed Ali Ahsan, a prominent poet and writer, once went to Japan and met the great Nobel Laureate Yasunari Kawabata. One day they were sitting at a restaurant. Kawabata talked to the waiter in Japanese and ordered for bee soup. The soup was served. After finishing with it, Kawabata asked Ali Ahsan, "Do you know what you were taking so long?" Ali Ahsan replied, "Soup." Kawabata smilingly said, "Bee soup." Ali Ahsan got vomiting tendency.

- a. What phylum do bees belong to? 1
- b. Body shells of both crabs and oysters are hard. How are the shells different? 2
- c. Represent a comparison between the phylum of bee and that of oyster. 3
- d. "These phyla can play a vital role in the economy of Bangladesh." Evaluate the statement. 4

2. Look at the pictures below and answer to the following questions :



A



B



C

- a. What are the sub-phylum of Chordata? 1
- b. In what way animal 'B' helps a student? 2
- c. What classes do animals A, B and C belong to? Write two distinctive features for each class. 3
- d. "All the three animals can ensure tremendous benefit."—Justify the statement. 4

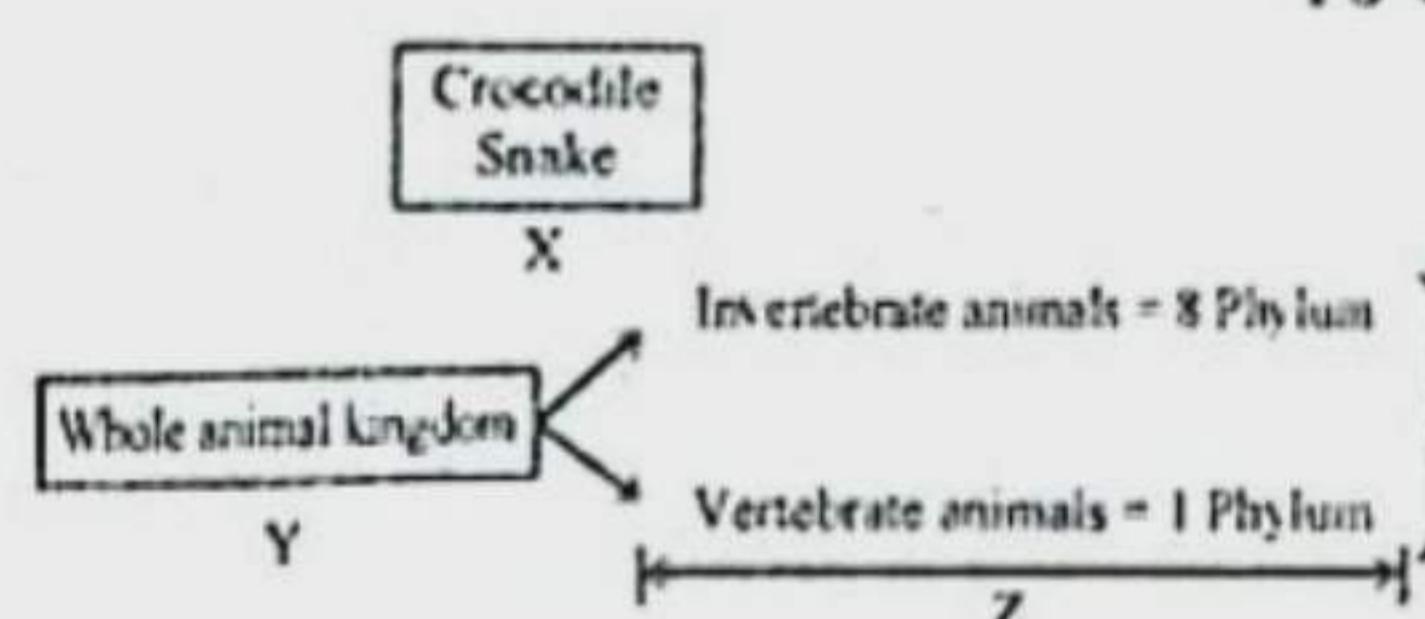
3. During supper, Nuzhat noticed a curry of Hilsa fish on the dining table. At that time as there was no electricity, her elder sister, Orpa brought a candle. Suddenly an animal fell on the curtain beside the dining table. It had joint appendage and antenna. At this Nazhat became afraid.

- a. What is binomial nomenclature? 1
- b. Why is crocodile called reptilia? 2
- c. Of which phylum is the animal that fell on the curtain as mentioned in the stem? Explain. 3
- d. Though the phylum of Nazhat and the fish used in the curry mentioned in the stem is the same they are not of the same class—Analyze. 4



- a. What is called classification? 1
- b. Why crocodile is called reptilia? 2
- c. In which class animal 'X' belongs to? Explain. 3
- d. Though fig. 'Y' and 'Z' are the same kingdom but they stay in different phylum—Analyze with logic. 4

5.



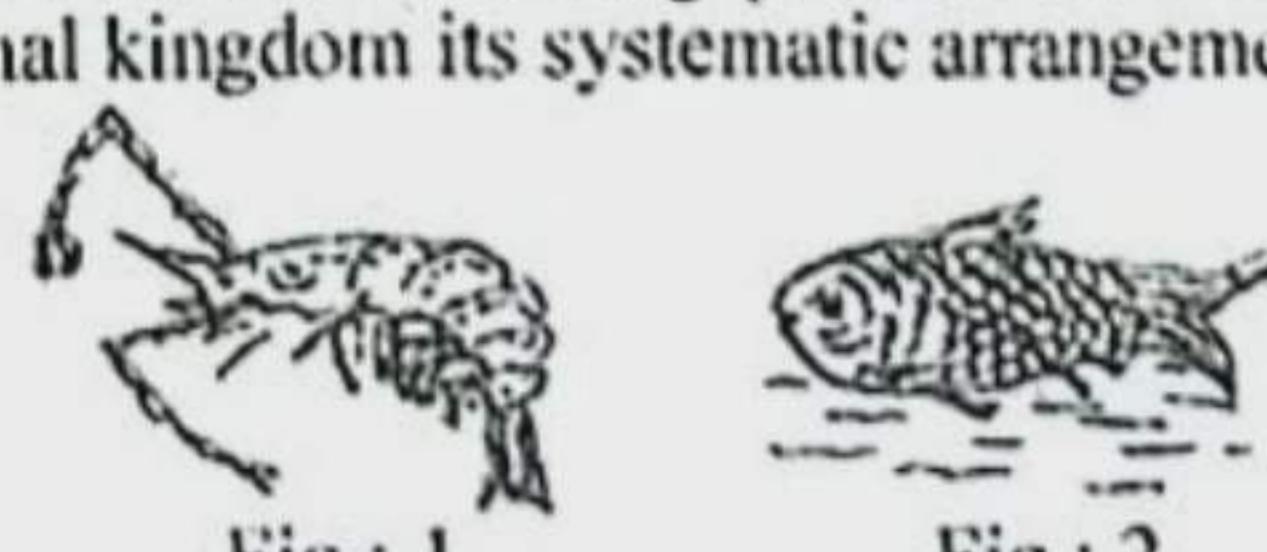
- a. What is called invertebrate animals? 1
 - b. Why does frog live in water and on land? 2
 - c. 'X' is included in a class—Explain. 3
 - d. 'Z' is necessary to know 'Y'—Analyze. 4
6. In practical class sir shows some typical samples of Hammer fish, Ascidia, Petromyzon. After showing this animals. sir said that there is a procedure to identify millions of other animals individually. This procedure is divided into seven steps.
- a. What is coelom? 1
 - b. Why frog is called amphibian animal? 2
 - c. Explain the systematic-position of the first two animals that mentioned in the stem. 3
 - d. Evaluate the requirements of the procedure mentioned by sir. 4

Fig : 1

7.



- a. What is called binomial? 1
 - b. Why Frog is called amphibia? 2
 - c. Which phylum the figure-A belongs to—Explain. 3
 - d. Are the animals belong to same phylum in figure 'B' and figure 'C'? Give your opinion with logic. 4
8. In order to give conception of the animal kingdom the science teacher drew the following pictures and said, "To know the animal kingdom its systematic arrangement is a must."



- a. What is binomial naming? 1
- b. Why does mussel belong to phylum mollusca? 2
- c. Explain the dissimilarities between picture-1 and picture-2. 3
- d. Evaluate the genuineness of the statement of the science teacher. 4

Answering Reference ► Short-Answer Questions

- 1 ▶ See this Chapter, Ques. 02 | 5 ▶ See this Chapter, Ques. 08 | 9 ▶ See this Chapter, Ques. 18 | 13 ▶ See this Chapter, Ques. 30
 2 ▶ See this Chapter, Ques. 03 | 6 ▶ See this Chapter, Ques. 10 | 10 ▶ See this Chapter, Ques. 21 | 14 ▶ See this Chapter, Ques. 35
 3 ▶ See this Chapter, Ques. 05 | 7 ▶ See this Chapter, Ques. 13 | 11 ▶ See this Chapter, Ques. 23 | 15 ▶ See this Chapter, Ques. 40
 4 ▶ See this Chapter, Ques. 07 | 8 ▶ See this Chapter, Ques. 15 | 12 ▶ See this Chapter, Ques. 27

- 1 ▶ See this Chapter, Ques. 08 | 3 ▶ See this Chapter, Ques. 04 | 5 ▶ See this Chapter, Ques. 08 | 7 ▶ See this Chapter, Ques. 12
 2 ▶ See this Chapter, Ques. 03 | 4 ▶ See this Chapter, Ques. 05 | 6 ▶ See this Chapter, Ques. 10 | 8 ▶ See this Chapter, Ques. 14

Answering Reference ► Creative Questions