Animal Kingdom

Prepared by Mr. John Ebenezer

Class: XI **Biology**

Multiple Choice Questions

1. In some animal groups, the body is found divided into compartments with a serial repetition of at least some organs. This characteristic feature is called

a. Segmentation

b. Metamerism

c. Metagenesis

d. Metamorphosis

Ans. b. Metamerism

2. Given below are types of cells present in some animals. Which of the following cells can differentiate to perform different functions?

a. Choanocytes

b. Interstitial cells

c. Gastrodermal cells

d. Nematocytes

Ans. b. Interstitial cells

3. Which one of the following sets of animals shares a four-chambered heart?

a. Amphibian, Reptiles, Birds

b. Crocodiles, Birds, Mammals

c. Crocodiles, Lizards, Turtles

d. Lizards, Mammals, Birds

Ans. b. Crocodiles, Birds, Mammals

4. Which of the following pairs of animals has non-glandular skin

a Snake and Frog

b. Chameleon and Turtle

c. Frog and Pigeon

d. Crocodile and Tiger

Ans. b. Chameleon and Turtle

5. Birds and mammals share one of the following characteristics as a common feature.

a. Pigmented skin

b. Pneumatic bones

c. Viviparity

d. Warm-blooded

Ans. d. Warm-blooded

6. Which one of the following sets of animals belongs to a single taxonomic group?

a. Cuttlefish, Jellyfish, Silverfish, Dogfish, Starfish

b. Bat, Pigeon, Butterfly

c. Monkey, Chimpanzee, Man

d. Silkworm, Tapeworm, Earthworm

Ans. c. Monkey, Chimpanzee, Man

7. Which one of the following statements is incorrect?

a. Mesoglea is present in between ectoderm and endoderm in Obelia.

b. Exhibits radial symmetry Asterias

c. Fasciola is a pseudocoelomate animal

d. Taenia is a triploblastic animal

Ans. c. Fasciola is a pseudocoelomate animal

8. Which one of the following statements is incorrect?

a. In cockroaches and prawns excretion of waste material occurs through malpighian tubules.

b. In ctenophores, locomotion is mediated by comb plates.

c. In Fasciola, flame cells help in excretion

d. Earthworms are hermaphrodites and yet cross-fertilization takes place among them.

Ans. a. In cockroaches and prawns excretion of waste material occurs through malpighian tubules.

9. Which one of the following is oviparous?

a. Platypus

b. Flying fox (Bat)

c. Elephant

d. Whale

Ans. a. Platypus

10. Which one of the following is a non-poisonous snake?

a. Cobra

b. Viper

c. Python

d. Krait

Ans. c. Python

11. Match the following list of animals with their level of organisation.

Division of Labour	Animal
A. Organ level	i. Pheretima
B. Cellular aggregate level	ii. Fasciola
C. Tissue level	iii. Spongilla
D. Organ system level	iv. Obelia

Choose the correct match showing the division of labour with animal example.

a. i-B, ii-C, iii-D, and iv-A

b. i-B, ii-D, iii-C, and iv-A

c. i-D, ii-A, iii-B, and iv-C

d. i-A, ii-D, iii-C, and iv-B

Ans. c. i-D, ii-A, iii-B, and iv-C

12. The body cavity is the cavity present between the body wall and the gut wall. In some animals, the body cavity is not lined by mesoderm. Such animals are called

a. Acoelomates

b. Pseudocoelomates

c. Coelomates

d. Haemocoelomates

Ans. b. Pseudocoelomates

13. Match the column A with column B and choose the correct option

Column-A	Column-B
A. Porifera	i. Canal system
B. Aschelminthes	ii. Water-vascular system
C. Annelida	iii. Muscular pharynx
D. Arthropoda	iv. Jointed appendages
E. Echinodermata	v. Metameres

a. A-ii, B-iii, C-v, D-iv, E-i

b. A-ii, B-v, C-iii, D-iv, E-i

c. A-i, B-iii, C-v, D-iv, E-ii

d. A-i, B-v, C-iii, D-iv, E-ii

Ans. c. A-i, B-iii, C-v, D-iv, E-ii

Very Short Answer Type Questions

1. Identify the phylum in which adults exhibit radial symmetry and larva exhibit bilateral symmetry.

In the phylum Echinodermata, the radial symmetry is exhibited by the adult while the bilateral symmetry is exhibited by the larva.

2. What is the importance of pneumatic bones and air sacs in Aves?

Pneumatic bones make their body lightweight and facilitate the flying and air sacs are helpful in respiration and buoyancy.

3. What is metagenesis? Mention an example which exhibits this phenomenon.

The phenomenon of alternation of generations between sexual and asexual mode of reproduction is called metagenesis.

4. What is the role of feathers?

In aves, besides pneumatic bones, feathers are also helpful in making the body weigh lighter and help in flight.

5. Which group of chordates possess sucking and circular mouth without jaws?

Cyclostomes possess sucking and circular mouth without jaws. Since their mouth is circular and lacks jaws, they are also called agnathans.

6. Give one example each for an animal possessing placoid scales and that with cycloid scales.

Placoid scales are the tiny tough scales that cover the skin. Examples are Trygon, Pristis

Cycloid scales are characterized by having a smooth outer margin. Examples are Catla, Clarias

7. Mention two modifications in reptiles required for terrestrial mode of life.

Internal fertilization (makes the chances of the survival of young ones better). The body is covered with dry and cornified skin and epidermal scales.

8. Mention one example each for animals with a chitinous exoskeleton and those covered by a calcareous shell.

Chitinous exoskeleton covers the body of cockroach (Arthropods) and calcareous shell covers the body of Pila (Molluscs).

9. What is the role of the radula in molluscs?

The radula is a special structure in molluscs which is used to scrape and scratch the food and to create a depression in rocks which molluscs use as their habitat.

10. What is bioluminescence? Name the animals which exhibit the phenomenon of bioluminescence. Mention the phylum to which they belong.

The phenomenon of production and emission of light by an organism as a result of a chemical reaction during which chemical energy is converted to light energy is called bioluminescence. Members of phylum Ctenophora such as Ctenoplana, Pleurobrachia exhibit bioluminescence.

11. Differentiate between a diploblastic and a triploblastic animal.

The animal whose body is made of only two germ layers such as ectoderm and endoderm, is known as diploblastic animal. Eg., Coelenterates

The animal whose body arises from three primary germ layers such as ectoderm, mesoderm and endoderm, is known as triploblastic animal. Eg. Chordates.

12. Give an example of the following

a. Roundworm

b. Fish possessing poison sting

c. A limbless reptile/ amphibian

d. An oviparous mammal

a. Roundworm: Ascaris

b. Fish possessing poison sting: Trygon

c. A limbless reptile/ amphibian: reptile – Snake, Amphibian – Ichthyophis

d. An oviparous mammal: Duck-billed platypus

Short Answer Type Questions

1. Differentiate between:

a. Open circulatory system and closed circulatory system

b. Oviparous and viviparous characteristic

(a) Blood is pumped out the heart and the cells and tissues are directly bathed in the open circulatory system whereas the closed circulatory system is circulated throughout the body with the help of series of vessels

(b) Laying of fertilized and unfertilized eggs are known as oviparous whereas giving birth to young ones is viviparous

2. Distinguish between intracellular and extracellular digestion.

Intracellular Digestion	Extracellular Digestion
It occurs in lower organisms	Occurs in multicellular organisms
Occurs within cells	Occurs within the cavity of the alimentary canal, outside the cell
It is less efficient with no regional differentiation	Highly efficient with regional differentiation
Enzymes associated are very few	Large number of digestive glands and enzymes are required

3. Sort out the animals on the basis of their symmetry (radial or bilateral) coelenterates, ctenophores, annelids, arthropods, and echinoderms.

In radial symmetry, the body of an individual can be divided into equal halves by any plans passing through the longitudinal axis.

Radial symmetry: Coelenterates, Ctenophores, Echinoderms

In bilateral symmetry, the body can be divided into two halves when the plane passes through the median longitudinal axis. Bilateral symmetry: Annelids, Arthropods.

4. What is the difference between direct and indirect development?

Direct Development	Indirect Development
Occurs in fish, reptile birds and mammals	Occurs in vertebrate amphibians
In direct development, the embryo develops into a well-grown individual without involving a larval stage.	It involves a sexually immature larval stage
Metamorphosis is absent	Metamorphosis is present
E.g.: Hydra, earthworm	E.g.: Frog, butterfly

5. There has been an increase in the number of chambers in the heart during the evolution of vertebrates. Give the names of the class of vertebrates having two, three or four-chambered heart.

Two-chambered hearts: Chrondrichytes and osteocytes

Three- chambered heart: Amphibia and Reptile

Four-chambered heart: Aves and mammalian

6. If you are given a specimen, what are the steps that you would follow to classify it?

The steps to classify the specimen are given below:

Level of organization: Classify the arrangement of cells in the cellular and tissue-level organization.

Symmetry: Classify the organism according to radial or bilateral symmetry.

Classify Diploblastic or triploblastic organization

Presence or absence of body cavity

Type of coelom development

Classify segmentation

Differentiate the presence or absence of notochord.

7. How useful is the study of the nature of body cavity and coelom in the classification of animals?

The coelom is the body cavity or fluid-filled space lined by the mesoderm, and an animal with a coelom is called a coelomate.

In some animals, the body cavity is not covered by the mesoderm; instead, the mesoderm is a scattered cyst between the ectoderm and the endoderm.

Such a body cavity is called a pseudocoelom, and the animals that have them are called pseudocoelomates, for example, Aschelminthes.

Some animals have no body cavity; they are called acoelomates, for example, Platyhelminthes.

Classification of the body cavity and coelom is important to decide the complexity of an organism at the organ level.

8. Water vascular system is the characteristic of which group of the following:

(a) Porifera (b) Ctenophora (c) Echinodermata (d) Chordata

From the four given options the correct answer is (c) Echinodermata

This is their characteristic. A perforated panel in them, known as madreporite, allows water to percolate in their systems.

9. "All vertebrates are chordates but all chordates are not vertebrates". Justify the statement.

The presence of a notochord and paired pharyngeal gill slits is characteristic of the phylum chordate. However, the vertebrata notochord in the embryo in the subfilm is replaced by columns of bony vertebrae in adults. It is, therefore, said that "All vertebrates are chordates, but not all chordates are vertebrates."

10. What is the relationship between germinal layers and the formation of the body cavity in case of coelomate, acoelomates and pseudocoelomates?

Germinal layers are those which formed during the process of gastrulation.

The outer layer of germ is called ectoderm, the middle one is endoderm and the innermost is the endoderm.

Coelomates are the organisms possessing coeloms. The coelom is the body cavity lined by the mesoderm.

Examples of coelomates are phylum Annelida, Mollusca, arthropods, etc.

The organisms with absent body cavities are called coelomates. E.g. Platyhelminthes. Some of the organisms do not have a lining by mesoderm.

Instead of that, it will be in the form of a scattered pouch in between ectoderm and endoderm.

Such a body cavity is called pseudocoelom and animals possessing pseudocoelom are referred to as pseudocoelomates e.g., Ascaris.

11. Comment upon the habitats and external features of animals belonging to class, amphibia and reptilia.

Amphibia

They are thin and have smooth skin which can live on both land and water.

Their eyes have eyelids and have a pair of limbs.

A tympanum is representing the ears. Examples are Rana(frog) and cobra

Reptiles

They are covered with dry and confined skin and scales.

They mostly live on land. Tympanum represents ear.

They have a pair of limbs. They will creep and crawl.

These category organisms are oviparous, fertilization is internal and development is direct or indirect.

Examples are crocodile, turtle etc

12. What are the peculiar features that you find in parasitic platyhelminthes?

The typical features of the parasitic platyhelminthes are:

Free-living parasitic forms.

They have an organ level of organization.

Mostly hermaphrodites

Three-layered body wall – the epidermis (outer covering) is often ciliate and covered with cuticle.

The digestive tract is incomplete or absent

The presence of well-defined excretory structures, such as flame cells.

Presence of anti-toxins and a thick tegument which is resistant to the digestive enzymes of the host.

Anaerobic respiration. No special respiratory structure was observed.

The front body part has suckers, hooks, eye spots and auricles to attach to the hosts.

A highly developed reproductive system of parasitic forms.

13. What are the reasons that you can think of for the arthropods to constitute the largest group of the animal kingdom?

The following are the causes for the arthropods making up the largest group of animal kingdoms:

They have jointed legs that allow them to be motile, and perform many other functions due to these jointed appendages.

A hardened skeleton made of chitin protects their body.

Hard skeletons reduce water loss from the body.

Demonstrate a different system for locomotion, respiration and reproduction.

Ability to live in diverse conditions and varied habitats.

In comparison to other phyla, they are pre-developed.

Well-developed sense organs and nervous system.

Some insects exhibit pheromones that enable communication.

14. Mammals are most adapted among the vertebrates. Elaborate.

Mammals are found in a variety of habitats like deserts, plains and mountains.

They differ in the type of jaws and sexes are separate and fertilization is internal.

They have pairs of limbs which are used for walking, burrowing, climbing etc.

Their mammary glands produce milk to nourish their young ones.

They are warm-blooded which helps them maintain their body temperature in different weather conditions.

They have hair-like structures which act as insulation against cold.

The 4-chambered heart is present in mammals.

The brain is well developed.

Examples of Mammals: Humans, Whales, Dogs, Camels, etc

15. Write a short note on the following with examples.

(a) Notochord

(b) Hermaphrodites

(c) Malpighian tubules

(d) Radula

(e) Poikilothermous Animals

(f) Homoiothermous Animals

Notochord:

Notochord is a mesodermally derived cartilaginous flexible skeletal rod-like structure formed on the dorsal side of some animals.

The animals which possess notochord are called chordates. Eg. Pisces, Amphibians, Reptile Aves and Mammals.

The animals which do not possess notochord are called non-chordates, e.g., Porifera to Echinoderms.

Hermaphrodites:

The animals which have both male and female reproductive organs in the same individual are called hermaphrodites or bisexual animals. Examples., Earthworms and a few Snails.

Malpighian tubules:

The excretory organ of Arthropods is called malpighian tubules.

Radula:

The file-like grasping organ found in the mouth of Mollusca, used for feeding is called radula**.**

Poikilothermous Animals:

The animals which lack the capacity to regulate their body temperature are called cold-blooded animals or poikilothermous animals**.** Eg. Pisces, Amphibia and Reptiles.

Homoiothermous Animals:

The animals which are able to maintain a constant body temperature are called warm-blooded animals or **homoiothermous animals**. Eg. Aves and Mammals.

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