Animal Kingdom

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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.

The statement (a) is incorrect because Malpighian tubules are excretory structures in most of the insects, including cockroach, but **green glands** perform excretory functions in crustaceans like **prawns**, whereas all the other statements are true.

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, Pritis

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. Name the animal, which exhibits the phenomenon of bioluminescence. Mention the phylum to which it belongs.

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 the phylum ctenophores like Ctenoplana, Velamen, Beroe, etc.

11. Write one example each of the following in the space provided.

a. Cold blooded animal _____

b. Warm blooded animal _____

c. Animal possessing dry and cornified skin _____

d. Dioecious animal _____

Solution:

a. Cold blooded animal: Frog (Amphibians)

b. Warm blooded animal: Humans (Mammals)

c. Animal possessing dry and cornified skin: Lizard (Reptiles)

d. Dioecious animal: Ascaris (Aschelminthes)

12. Differentiate between a diploblastic and a triploblastic animal.

Diploblastic animals are with cells arranged in two embryonic layers. Example: Coelenterates

The triploblastic animal is those which the developing embryo has a third germinal layer. Example: Chordates.

13. Give an example of the following

a. Roundworm

b. Fish possessing poison sting

c. A limbless reptile/ amphibian

d. An oviparous mammal

Solution:

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

14. Provide appropriate technical term in the space provided.

a. Blood-filled cavity in arthropods _____.

b. Free-floating form of cnidaria _____.

c. Stinging organ of jelly fishes _____.

d. Lateral appendages in aquatic annelids _____.

Solution:

a. A blood-filled cavity in arthropods: Haemocoel

b. Free-floating form of cnidaria: Medusa

c. The stinging organ of jellyfishes: Nematocyst

d. Lateral appendages in aquatic annelids: Parapodia

15. Match the following:

Animals	Locomotory Organ
a. Octopus	**i. Limbs**
b. Crocodile	**ii. Comb plates**
c. Catla iii.	**iii. Tentacles**
d. Ctenoplana	**iv. Fins**

Solution:

a. Octopus – Tentacles

b. Crocodile – Limbs

c. Catla – Fins

d. Ctenoplana – Comb plates

SHORT ANSWER TYPE QUESTIONS

1. Differentiate between:

a. Open circulatory system and closed circulatory system

b. Oviparous and viviparous characteristic

c. Direct development and Indirect development

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

c) When a larval stage is absent in the development of the organism, it is direct development whereas the larval stage is present in the development of the organism which does not resemble the adult is called indirect development.

2. 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.

3. 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

4. Fill up the blank spaces appropriately

Phylum/Class	Excretory organ	Circulatory organ	Respiratory organ
Arthropoda	A	B	Lungs/Gills/Tracheal system
C	Nephridia	Closed	Skin/parapodia
D	Metanephridia	Open	E
Amphibia	F	Closed	Lung

Solution:

A = Malpighian tubules

B = Open

C = Annelida

D = Mollusca

E = Feather-like gills

F = Amphibians have kidneys as their excretory organs

5. Match the following

a. Amphibia	i. Air bladder
b. Mammals	ii. Cartilaginous notochord
c. Chondrichthyes	iii. Mammary glands
d. Osteichthyes	iv. Pneumatic bones
e. Cyclostomata	v. Dual habitat

f. Aves	**vi. Sucking and circular mouth without jaws.**

Solution:

a. Amphibia – Dual habitat

b. Mammals – Mammary glands

c. Chondrichthyes – Cartilaginous notochord

d. Osteichthyes – Air bladder

e. Cyclostomata – Sucking and circular mouth without jaws

f. Aves – Pneumatic bones

6. Endoparasites are found inside the host body. Mention the special structure, possessed by these and which enables them to survive in those conditions.

Endoparasites have the following adaptations:

They have high reproductive capacity.

Presence of adhesive organs or suckers to cling on to the host.

Loss of digestive system.

Loss of unnecessary sense organs.

7. Match the following and write correct choice in space provided

Animal	**Characteristics**
a. Pila	**i. Jointed appendages**
b. Cockroach	**ii. Perching**
c. Asterias	**iii. Water vascular system**
d. Torpedo	**iv. Electric organ**
e. Parrot	**v. Presence of shell**
f. Dogfish	**vi. Placoid scales**

Solution:

a. Pila – Presence of shell

b. Cockroach – Jointed appendages

c. Asterias – Water vascular system

d. Torpedo – Electric organ

e. Parrot – Perching

f. Dogfish – Placoid scales

8. Differentiate between:

a. Open and closed circulatory system

b. Oviparity and viviparity

c. Direct and indirect development

d. Acoelomate and pseudocoelomate

e. Notochord and nerve cord

f. Polyp and medusa

Solution:

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

c) When a larval stage is absent in the development of the organism, it is direct development whereas the larval stage is present in the development of the organism which does not resemble the adult is called indirect development.

d) The animal possessing no coelom are called coelomates whereas the body cavity lined by mesoderm instead mesoderm is present in between ectoderm and endoderm are called pseudocoelomate.

e) The notochord is mesodermally derived rod-like structure formed on the dorsal side during embryonic development whereas the nerve cord is a solid strand of nervous tissue

f) Polyp is a sessile and cylindrical form like Hydra whereas Medusa is an umbrella-shaped and free-swimming like jellyfish

9. Give the characteristic features of the following citing one example of each

a. Chondrichthyes and Osteichthyes

b. Urochordata and cephalochordate

Chondrichthyes

Their habitat is mainly marine and their body is streamlined. They have a cartilaginous endoskeleton.

Examples are scoliosis and Trygon

Osteichthyes

The habitat is both marines as well as freshwater and they have a streamlined body. The endoskeleton is bony.

Examples are Marine: Hippocampus (Sea horse), Freshwater: Labeo (Rohu), Aquarium: Betta (Fighting fish)

Urochordata

In urochordates, the notochord is present only in the larval tail. Eg., Ascidia, Salpa.

Cephalochordate

In cephalochordates, notochord extends from head to tail region and is persistent throughout the life.

Eg., Branchiostoma.

10. Mention two similarities between

a. Aves and mammals

b. A frog and crocodile

c. A turtle and pila

a) Aves and mammals are warm-blooded and have 4 chambered heart

b) A frog and crocodile are cold-blooded and are oviparous

c) Turtle and pilla are cold-blooded and are oviparous animals

11. Name the following.

a. A limbless animal

b. A cold-blooded animal

c. A warm-blooded animal

d. An animal possessing dry and cornified skin

e. An animal having a canal system and spicules

f. An animal with cnidoblasts

a. A limbless animal – Icthyophis

b. A cold-blooded animal – Trygon

c. A warm-blooded animal – Macaca (monkey)

d. An animal possessing dry and cornified skin – Naja (Cobra)

e. An animal having a canal system and spicules – Euspongia

f. An animal with cnidoblasts – Hydra

12. Give an example for each of the following

a. A viviparous animal

b. A fish possessing a poison sting

c. A fish possessing an electric organ

d. An organ, which regulates buoyancy

e. Animal, which exhibits alternation of generation

f. An oviparous animal with mammary gland

a. A viviparous animal – Panthera leo

b. A fish possessing a poison sting – Trygon

c. A fish possessing an electric organ – Torpedo

d. An organ, which regulates buoyancy – Air bladder

e. Animal, which exhibits alternation of generation – Obelia

f. The oviparous animal with mammary gland – Echidna

13. Excretory organs of different animals are given below. Choose correctly and write in the space provided.

Animal	**Animal Excretory Organ/Unit**
a. Balanoglossus	**i. Metanephridia**
b. Leech	**ii. Nephridia**
c. Locust	**iii. Flame cells**
d. Liver fluke	**iv. absent**
e. Sea urchin	**v. malpighian tubule**
f. Pila	**vi. Probosci's gland**

Solution:

a. Balanoglossus – Proboscis gland

b. Leech – Nephridia

c. Locust – Malpighian tubule

d. Liver fluke – Flame cells

e. Sea urchin – Absent

f. Pila – Metanephrida

LONG ANSWER TYPE QUESTIONS

1. Give three major differences between chordates and non-chordates and draw a schematic sketch of a chordate showing those features.

Chordates	Non-Chordates
Have notochord The tail is present at some stage	Don't have a notochord Tail is absent
Heart is ventral	Heart is dorsal
CNS is dorsal	CNS is central, solid and double
Gill slits are present in the pharynx	Gill slits are absent

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

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

The outer layer of germ is called ectoderm, the middle one is mesoderm and the innermost is the endoderm. Coelomates are the organisms possessing coeloms.

Presence or absence of a cavity between the body wall and the gut wall is very important in classification.

The type of body in which there is no body cavity is called acoelom. Eg, Platyhelminthes.

The type of body in which there is mesoderm around the outer body wall but not around the gut is called pseudocoelom. Eg., Aschelminthes

The type of body in which there is mesoderm around the outer body wall and around the gut is called true coelom or Eucoelom.

Animals possessing coelom are called **coelomates,** e.g., annelids, molluscs, arthropods, echinoderms, hemichordates and chordates.

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

Examples are crocodile, turtle etc

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

The following are some of the adaptations that mammals have:

Mammals may be found in a wide range of habitats, including mountains, deserts, grasslands, plains, and even aquatic environments.

Insulation is provided by skin hairs.

Mammals have two sets of limbs that allow them to run, leap, stroll, fly, climb, and burrow.

They are warm-blooded creatures, meaning they can regulate their body temperature.

Sexual dimorphism is well established and serves as a critical survival mechanism.

Sweat glands are found on mammalian skin and aid in osmoregulation and temperature regulation.

External ears aid in the effective capture of sound waves.

The four-chambered heart allows for more effective double circulation than single circulation.

The majority of mammals are viviparous.

This contributes to animals living longer lives.

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