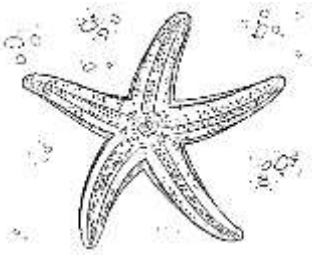
THE VILLAGE INTERNATIONAL SCHOOL
"We Nurture Dreams"

DEPARTMENT OF SCIENCE 2022-23

BIOLOGY QUESTION BANK - 3

CLASS: XI **Chapter 3: Animal Kingdom**

I	**SHORT ANSWER TYPE QUESTIONS FOR 2 MARKS:**
1.	What is a notochord? State its significance in classification. Ans: Notochord is a flexible rod like structure located between the nerve cord and the gut.On the basis of notochord there are two major groups of animals: Animals without notochord are called invertebrates or Non-chordates and animals with notochord are called Chordates.
2.	Identify the features of the animal shown in the figure below and state the phylum to it belongs with a special feature of the phylum.  Ans: The animal shown is starfish and it belongs to Phylum Echinodermata. One special feature of this phylum is presences of spines embedded in the skin of these animals.
3.	Differentiate between a coelom and a pseudocoelom. Ans:

Coelom	Pseudocoelom
Coelom is a body cavity line by mesoderm internally and externally located between body wall and gut.	Pseudocoelom is a body cavity located between body wall and gut but not lined by mesoderm.

4.	What are cnidoblasts and what is its importance?

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<table>
<tr><td></td><td>Ans: Cnidoblasts are defensive cells present in animals belonging to phylum Cnidaria. They contain toxins which are injected into body of prey or predators of cnidarians when attacked.</td></tr>
<tr><td>5.</td><td>Give a brief account of the symmetry seen in animals.
Ans: There are two types of symmetry in animals. They are;
i) Radial symmetry- Animals with this symmetry can be divided into equal halves through any plane that passes through the centre of the animal. All the body parts are arranged around a central point.
ii)Bilateral symmetry – Animals with this symmetry can be divided into two equal halves through one single plane. The body has equal lateral halves.</td></tr>
<tr><td>6.</td><td>Explain the following terms:
i) Metamerism
ii) Metameres
Ans: i) In some animals, the body is externally and internally divided into segments with a serial repetition of at least some organs, this is known as metamerism.
ii)The segments of the body are called metameres.</td></tr>
<tr><td>7.</td><td>What is the major identifying feature of arthropods? Give any two examples for arthropods.
Ans: Animals in Arthropoda have jointed appendages. Eg: Prawns, Crabs etc</td></tr>
<tr><td>8.</td><td>Compare the exoskeleton of Pisces and reptiles.
Ans: In fishes the exoskeleton is made of flexible scales.
In reptiles the scales are hard and cornified</td></tr>
<tr><td>9.</td><td>Differentiate between Homeotherms and poikilotherms.
Ans:
<table><tr><th>Homeotherms</th><th>Poikilotherms</th></tr><tr><td>Homeotherms have a constant body temperature and do not change it according to changes in the surroundings.</td><td>Poikilotherms do not have constant temperature and can change it according to the changes in the surroundings.</td></tr></table></td></tr>
<tr><td>10.</td><td>List any two salient features of mammals.
Ans: i) Presence of mammary glands.
ii)Presence of hairs and glands in skin as exoskeleton.</td></tr>
</table>

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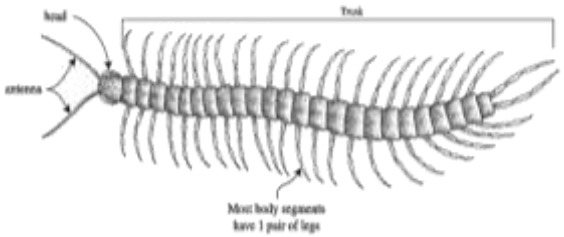
11.	Pick the odd man from the list of animals given and justify your answer. Silver fish, Flying fish, Shark, Hippocampus Ans: Silver fish is the odd one among the other animals given. Silver fish is an invertebrate placed under the phylum Arthropoda whereas all the others are vertebrates placed under Pisces class.
12.	How would you distinguish between a cartilaginous fish and bony fish on the basis of exoskeleton and endoskeleton? Ans: Cartilaginous fishes have exoskeleton of placoid scales and endoskeleton of cartilage. Bony fishes have exoskeleton of cycloid scales and endoskeleton of bones.
13.	Bats are Mammals. Justify this statement with any two reasons. Ans: Bats have mammary glands and have exoskeleton of hairs and glands in their skin. They are warm blooded too.
14.	Identify and name the phyla mentioned below: a) Having pores throughout the body b) Soft bodied animals c) Largest invertebrate phylum d) Spiny skinned invertebrates Ans: a) Porifera b) Mollusca c) Arthropoda d) Echinodermata
15.	 Under which phylum is the animal shown above placed and why? Ans: As this animal has jointed legs for locomotion and antennae for detecting food, it is included in phylum Arthropoda.
16.	Differentiate between diploblastic and triploblastic organisms. Ans:

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	Diploblastic	Triploblastic
	In diploblastic organisms, there are only two germ layers in the embryo- ectoderm and endoderm	In triploblastic organisms, there are three germ layers in the embryo- ectoderm, mesoderm and endoderm.
17.	Explain closed circulatory system. Ans: Closed circulatory system is circulatory system where blood is pumped through blood vessels. The closed circulatory system consists of blood, heart and blood vessels.	
18.	What are germ layers? Ans: The cellular layers in the embryo (gastrula stage) is called germ layers. The major germ layers are: Outer layer called ectoderm, Middle layer called mesoderm and Inner most layer called endoderm.	
19.	Name any two exclusively marine phyla and one similar feature in both of them. Ans: Porifera and Echinodermata. Both of these possess a water canal system which helps in circulation, respiration and excretion.	
20.	State the advantages of closed circulatory system. Ans: As blood flows through blood vessel enough pressure is maintained for circulation and effective exchange of materials at the cellular level. Furthermore, it ensures that blood reaches each and every cell of the body.	
	SHORT ANSWER TYPE QUESTIONS FOR 3 MARKS:	
21.	Explain the three major levels of organisation seen in animals. Ans: The three major levels of organisation seen in animals are: i)Cellular level of organisation – The animal body is formed of loosely arranged cell groups. ii) Tissue level of organisation – The animal body is formed of tissues. iii) Organ level and Organ system level of organisation – The animal body consists of organs and coordinated organ systems.	
22.	Briefly explain the three types of body plan in animals. Ans: The three types of body plan in animals are: i)Cell aggregate plan – In this, the body is just an aggregate of cells with little differentiation.	

ii)Blind sac plan – In this, the animal has a single opening which acts both as mouth and anus.
iii)Tube-within-a-tube plan: In this, there are two separate opening – one for ingestion and another one for egestion.

23. Compare the three types of coelom.
Ans:

True coelom	Pseudocoelom	Haemocoelom
Body cavity between body plan and gut lined with mesoderm.	Body cavity between body plan and gut but not lined with mesoderm	Body cavity between body plan and gut not lined with mesoderm and filled with blood.

24. List three salient features of arthropods.
Ans: i) Presence of jointed appendages for locomotion.
ii) Possess a haemocoelom.
iii) Has a chitinous exoskeleton.

25. Differentiate between chordates and Non-chordates.
Ans:

Chordates	Non-chordates
i) Have a notochord.	i) Do not have notochord
ii) Nerve cord is present on the dorsal side.	ii) Nerve cord if present; is located on the ventral side.
iii)Tail is post anal	iii)No tail.

26. Differentiate between Pisces and Amphibia.
Ans:

Pisces	Amphibia
i) Aquatic in habitat.	i) Amphibious in habitat.
ii) Respiration is through gills.	ii) Respiration through gills, lungs and skin.
iii) Skin is covered with scales.	iii) Skin is scale less and has glands in it.

27. List the diagnostic features of chordates.
Ans: i) Presence of notochord.
ii) Presence of dorsal nerve cord.
iii) Post anal tail
iv) Paired gill slits

28. Give a brief account of the water canal system in porifera.
Ans: In Poriferans, water enters through the numerous pores in their body wall into a central cavity, from where it goes out through the opening at its anterior end, osculum. This pathway of water transport is helpful in food gathering, respiratory exchange and removal of waste.

29. State the significance of the following in Aves-
a) Pneumatic bones b) Air sacs c) Feathers
Ans: a) Pneumatic bones is a flight adaptation as it makes body light.
b) Air sacs help in buoyancy and also in storing excess air.
c) Feathers help in flight as well as for keeping body warm.

30. Mention three similarities and two differences between Aves and mammals.
Ans: Similarities between Aves and Mammals are :

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<table>
<tr><td></td><td>i) They have four chambered heart.
ii) They both are warm blooded or homeotherms.
iii)Respiration in both groups is pulmonary.
Differences between Aves and Mammals are:
i) The forelimbs in Aves are modified into wings which is absent in mammals.
ii) Aves have feathers as an exoskeletal structure. Mammals do not have feathers and they have hairs in their skin as exoskeletal structures.</td></tr>
<tr><td>31.</td><td>Explain with any 3 reasons why birds are able to fly.
Ans: Certain features in birds help them in flight:
i) Forelimbs are modified into wings.
ii)The bones are hollow and called pneumatic bones that reduce the body weight facilitating easy flight.
iii)Streamlined body to reduce air resistance.</td></tr>
<tr><td>32.</td><td>Give a brief account of Ctenophora.
Ans: Ctenophores are exclusively marine, radially symmetrical, diploblastic organisms with tissue level of organisation.
The body bears eight external rows of ciliated comb plates, which help in locomotion.
Bioluminescence (the property of a living organism to emit light) is well-marked in ctenophores.</td></tr>
<tr><td>33.</td><td>There has been an increase in the complexity of the heart in the evolution of vertebrates. Justify this statement.
Ans: In the various vertebrate classes, an increase in the number of chambers in heart is observed.
In Pisces, the heart is two chambered.
In Amphibians, it is three chambered.
In Reptiles, it is incompletely four chambered as the septa between the ventricles is not complete.
In aves and mammals it is completely four chambered.</td></tr>
<tr><td>34.</td><td>Mention the salient features of bony fishes citing any one example.
Ans: The salient features of bony fishes are:
i) Presence of cycloid or ctenoid scales
ii)Presence of an endoskeleton made up of bones
iii)The mouth is found to be terminal in position.
Example: Catla</td></tr>
<tr><td>35.</td><td>Mention three adaptive features that help reptiles in their terrestrial mode of life.
Ans: i) Presence of dry skin with cornified scales
ii) Respiration through lungs.
iii) Eggs protected with calcareous shells.</td></tr>
<tr><td>36.</td><td>Compare the three worm phyla on the basis of their coelom, body structure and body plan.
Ans:
<table>
<tr><td>Characteristics</td><td>Platyhelminthes</td><td>Aschelminthes</td><td>Annelida</td></tr>
<tr><td>i)Coelom</td><td>Acoelomate</td><td>Pseudocoelomate</td><td>True coelom</td></tr>
<tr><td>ii) Body structure</td><td>Dorsoventrally flattened body</td><td>Rounded cylindrical body</td><td>Cylindrical with metameres.</td></tr>
</table>
</td></tr>
</table>

	iii)Body plan	Blind sac body plan	Tube within a tube plan	Tube within a tube plan

37. Why are vertebrates so called? Name the classes under vertebrata.

Ans: Vertebrates are animals that have a notochord in their embryonic stage but gets replaced by a jointed vertebral column later in development.

The various classes under vertebrates are:

Pisces, Amphibia, Reptilia, Aves and Mammals.

38. Explain the aquatic adaptations in Pisces.

Ans: The various aquatic adaptations in Pisces are as follows:

i)Streamlined body to help in easy swimming and exoskeleton of scales to protect skin from water.

ii) Respiratory structures are gills that help in taking in oxygen dissolved in water.

iii)Fins and tail that help in swimming.

39. Differentiate between urochordates, cephalochordate and vertebrates.

Ans:

Urochordate	Cephalochordate	Vertebrate
In Urochordates, notochord is present only in larval tail.	In Cephalochordates, notochord extends from head to tail region and is persistent throughout their life.	Vertebrata possess notochord during the embryonic period. The notochord is replaced by a cartilaginous or bony vertebral column in the adult.

40. Identify the organisms shown in the diagram and classify them into respective phyla giving reasons.

(i) (ii)

Ans: i) The animal is a millipede and it belongs to phylum arthropoda as it has an chitinous exoskeleton and jointed appendages.

ii) The animal is an earthworm and it belongs to phylum annelida due to metameric segmentation and setae for locomotion.

LONG ANSWER TYPE QUESTIONS FOR 5 MARKS:

41. Briefly explain the following characteristics of Annelida:

a) Germ layers

b) Coelom

c) Body structure

d) Segmentation

e) Symmetry

Ans: a) Germ layers – Annelida has three germ layers and so are triploblastic.

b) Coelom – They have a true body cavity lined by mesoderm and located between body wall and gut.

c) Body structure – Cylindrical body with tube within a tube plan
d) Segmentation – They show metameric segmentation and so called segmented worms.
e) Symmetry- They possess bilateral symmetry.

42. Enlist any four characteristics of Echinodermata and give any two examples.
Ans: The characteristics of Echinodermata are:
i) They are exclusively marine.
ii)The adult echinoderms are radially symmetrical but larvae are bilaterally symmetrical.
iii) The most distinctive feature of echinoderms is the presence of water vascular system which helps in locomotion, capture and transport of food and respiration.
iv) These animals have spines embedded in the skin and, hence, the name Echinodermata.
Eg : Sea cucumber, Sea urchin

43. Complete the following table :

Characteristics	Pisces	Amphibia	Reptilia	Aves	Mammalia
Habitat					
Locomotion					

Ans:

Characteristics	Pisces	Amphibia	Reptilia	Aves	Mammalia
Habitat	Aquatic	Both land and water	Terrestrial	Arboreal	Cosmopolitan in distribution
Locomotion	Tails and fin	Two pairs of pentadactyl limbs. Hind limbs webbed.	Two pairs of pentadactyl limbs with claws.	Forelimbs modified into wings and hind limbs for balance.	Two pairs of pentadactyl limbs.

44. Give reasons for the following:
i) All chordates are not vertebrates but all vertebrates are chordates.
ii) Molluscans have a calcareous shell.
iii) Leech is placed under Phylum Annelida.
Ans:
i)All vertebrates have notochord during their embryonic stage which later gets replaced with vertebral column. But there are chordates do not have a vertebral column in their life and have only notochord.
ii)Molluscans are soft bodied animals. So to protect their body from injuries and water loss they have an exoskeleton of hard calcareous shell.
iii)Leech has metameric segmentation which is a typical feature of Annelida and so it is placed under Phylum Annelida.

45. Distinguish between oviparity and viviparity. Compare the oviparity in various classes of cold blooded vertebrates.
Ans: Oviparous animals are those who lay eggs which hatch out to offspring.
Viviparous animals give birth to young ones.
Pisces, Amphibia and Reptilia are the classes of vertebrates that are cold blooded.

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	In Pisces and Amphibia ,the eggs are not surrounded by membranes or shell. In Reptilia ,the eggs are surrounded by membranes and calcareous shells.
46.	Compare bony fishes and cartilaginous fishes. Ans:

Bony fishes	Cartilaginous fishes
i)Bony fishes include fresh water and marine fishes.	i) Always marine
ii)Exoskeleton is of cycloid or ctenoid scales	ii)Exoskeleton is of placoid scales.
iii)Endoskeleton is formed of bones.	iii)Endoskeleton is formed of cartilage.
iv)Mouth is terminal in position.	iv)Mouth is located on the ventral side.
v)Gill slits are not covered with operculum (gill cover)	v)Gill cover is present.

47.	Give an account of the features of the various non-chordate phyla distinctive to their names. Ans: Porifera is so called as these animals bears pores in their body. Cnidarians are so called due to the presence of defensive cells in their body called cnidoblasts. Ctenophorans have comb plates for locomotion. Platyhelminthes have dorsoventrally flattened body. Aschelminthes have cylindrical thread like body. Annelida have segmented body. Arthropoda have jointed appendages for locomotion. Mollusca have soft bodies. Echinodermata have spines embedded in their body surface.
48.	Identify the class of the following vertebrates and explain how they are different from other animals of their own class: a) Crocodiles b) Whales c) Platypus d) Snakes Ans: a) Crocodiles are reptiles having a completely four chambered heart unlike other reptiles who have incompletely four chambered heart. b) Whales are mammals in which hairs and skin glands are absent. And are not tetrapod like other mammals, the forelimbs are modified into flippers and hind limbs are absent. c) Platypus is a mammal but they lack nipples in mammary glands and are oviparous. d) Snakes are reptiles but lack limbs.
49.	Write a short note on Hemichordata and Protochordata. Ans: Hemichordata- This phylum consists of animals that resemble chordates and non-chordates. i)These animals have worm-like body with open circulatory system which is non-chordate feature. ii)Hemichordates have a structure similar to notochord in their larval stage.

	Protochordata includes Urochordata and Cephalochordata. In Urochordata, notochord is present only in larval tail, while in Cephalochordata, it extends from head to tail region and is persistent throughout their life.
50.	List the flight adaptations in Aves. Ans: i)Body is streamlined to reduce air resistance. ii)Forelimbs are modified into limbs iii)Presence of air sacs which help in improved efficiency of energy production. iv)Feathers which help in flight as well as in temperature tolerance. v)Well developed flight muscles and pneumatic bones. x……x