



BIOLOGY

BOOKS - CENGAGE BIOLOGY

CLASSIFICATION OF ANIMALS : VERTEBRATES

Question

1. Have you ever been to an aquarium ? What is your favourite type of fish ? Can you

determine which group it belongs to ?



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2. What are the three types of respiration in the frog ?



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3. What is the function of tail feathers in birds ?



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4. Which vertebrate classes are warm-blooded ?



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5. Which vertebrate classes lay eggs ?



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6. Which vertebrate classes have four legs ?



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7. Which vertebrate classes have internal fertilisation ?

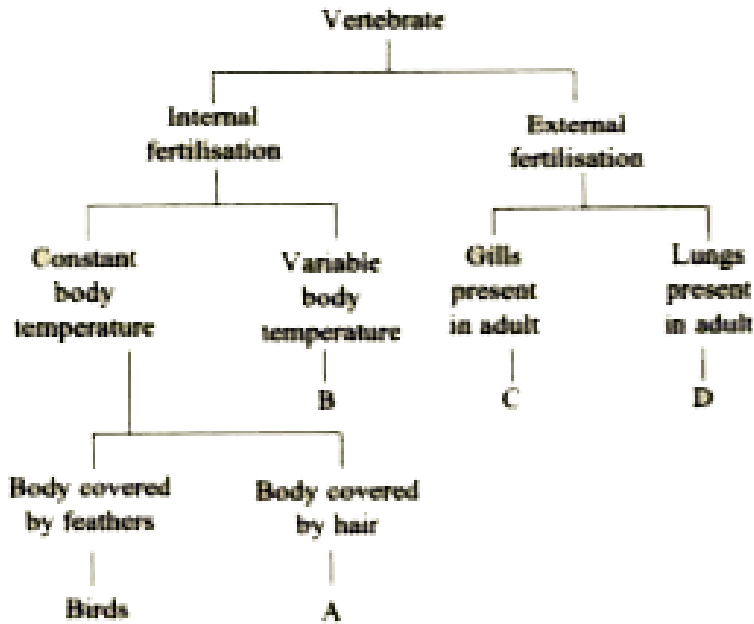


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8. The following key shows some of the features of vertebrates.

(a) Name one feature common to all vertebrates .

(b) Identify vertebrate groups A,B,C and D



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Mandatory Exercise

1. Read the following statements and identify the class of vertebrates:

This class needs to have 'moist' skin in order to breathe.

This class does not have scales.

This vertebrate class is unique because the members of this class breathe with either lungs, gills, or through the skin.

Animals in this vertebrate class lay eggs.

Members of this class have a backbone.

Animals in this class do not have claws and can have two or four legs.

These are cold blooded.

Some animals in this class are unique, as they are born with gills and then develop lungs.



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2. For each item in column A, write the letter of the matching item in column B.

Column A

Column B

- | | |
|---|----------------------|
| (a) Adult frogs and toads have legs, lungs, and a _____ heart. | (i) two-chambered |
| (b) Tadpoles have gills, fins, and a _____ heart. | (ii) three-chambered |
| (c) Amphibians are _____ animals whose body temperature changes with the temperature of their surroundings. | (iii) skin |
| (d) Fertilised amphibian eggs hatch into _____ during the aquatic phase of their life. | (iv) tadpoles |
| (e) Some salamanders have no lungs and breathe through their _____. | (v) ectotherms |



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3. Complete the chart by making a tick mark in the correct column(s) for each characteristic

feature of fish.

Adaptation	Cartilaginous	Bony
1. Jaws		
2. Gills		
3. Lateral line system		
4. Paired fins		
5. Endoskeleton is cartilage		



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4. Give reason : The bat can fly, yet it is not a bird.



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5. Give reason : Crocodiles and frogs belong to different classes.



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6. Give reason : There are no marine amphibians.



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7. Give reason : The whale is a mammal.



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8. Complete the following table with suitable words :

No.	Main characters	Group of animals
1.	Animals with feathers	
2.		Mammalia
3.	Animals covered with scales	
4.	Animals with backbone	
5.		Amphibia



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9. Give two example : Jawless fish _____



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10. Give two example : Cartilaginous fish



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11. Give two example : Egg-laying mammals



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12. Give two example : Placental mammals



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13. Give two example : Pouched mammals



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14. Identify each of the following body parts as being either dorsal or ventral on the animal's body.

_____ the navel of a killer whale



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15. Identify each of the following body parts as being either dorsal or ventral on the animal's body.

_____ the back of your neck





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16. Identify each of the following body parts as being either dorsal or ventral on the animal's body.

_____ the mouth of a shark



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17. Identify each of the following body parts as being either dorsal or ventral on the animal's

body.

_____ the pouch of a kangaroo



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18. Difference between shark and whale



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19. Different between bat and pigeon



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20. State the difference between agnatha and Gnathostomata.



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21. Differentiate between poikilothermal and homeothermal animals.



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22. Different between pisces and Tetrapoda



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23. Different between ureotelic and uricotelic animals



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24. Assertion : Birds have one ovary.

Reason : This reduces the body weight for flight.

A. If both Assertion and Reason are true and Reason is the correct explanation of Assertion

B. If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion

C. If Assertion is true but Reason is false

D. If both Assertion and Reason are false

Answer: A



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25. Name the animals which belong to subphyla Hemichordata, Urochordata, and Cephalochordata.



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26. The figure shows a young deer feeding from its mother.



State two features of the deer, visible in figure, that distinguish mammals from other vertebrates.



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27. Golden age of reptiles was

A. Archeozoic era

B. Mesozoic era

C. Cenozoic era

D. Palaeozoic era

Answer: B



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28. In fast swimming fishes, propulsion is mainly due to

A. pelvic fins

B. caudal fins

C. dorsal fins

D. pectoral fins

Answer: B



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Consolidated Exercise

1. Characteristics of two animals are given below under columns I and II:

	I	II
Habitat	Terrestrial	Terrestrial
Embryo develops in	Water	Egg
Mates	In water	In land
Fertilisation	External	Internal
Epidermis is covered with	Slime or mucus	Scales

(a) To which class of vertebrates does each of these belong?

(b) Which of these animals is most likely to have gills at certain stages of its life cycle?

(c) Name one animal for each group that may fulfil the above characteristics.



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2. The numbers on the flow chart refer to the questions that follow. Follow the scheme and ask the question with the same number. The answer will tell you which line to follow.

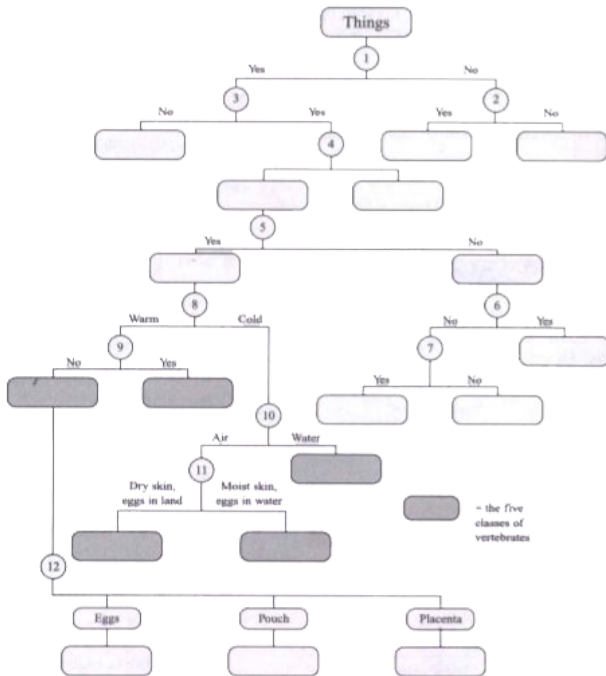
(1) Is it alive?

(2) Was it once alive?

(3) Can you see it without a microscope?

- (4) Is it an animal or a plant?
- (5) Does it have a backbone?
- (6) Does it have a exoskeleton?
- (7) Does it have a shell?
- (8) Is it warm-blooded or cold blooded?
- (9) Does it have feathers?
- (10) Does the adult take oxygen from air or water?
- (11) Does it have dry, scaly skin and lay eggs on land, or does it have moist skin and lay eggs in water?
- (12) What kind of mammal is it: does it lay eggs, does it have a young one that climbs

into a pouch, does it have a young one that can live outside the mother (placental mammal)?



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3. Match the items under column I with those under column II

Column I	Column II
(a) Notochord	(i) Internal fertilisation
(b) Cartilaginous fish	(ii) First vertebrates with amniotic eggs
(c) Bony fishes	(iii) Have hairs
(d) Reptiles	(iv) Have an operculum to cover their gills

(e) Birds	(v) The first vertebrates with legs
(f) Mammals	(vi) Two groups which evolved from reptiles
(g) Amphibians	(vii) The first vertebrates on land
	(viii) Have vertebral column
	(ix) Have a swim bladder that provides buoyancy
	(x) Have tadpole larvae



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Consolidated Exercise Mcqs

1. Complete the crossword puzzle using the clues given:

Across

1. Also known as being cold blooded
2. Subclass of Mammalia which represents pouched mammals
3. Vertebrate that lives both on land and in water

4. Class of vertebrates that includes jawless fish-like lamprey and hagfish

5. A kind of egg which usually has a hard shell that protects the embryo from drying out

6. This name is derived from the structure notochord

7. Class of vertebrates that includes the fishes having skeleton consisting of bone

8. Milk-secreting glands of mammals

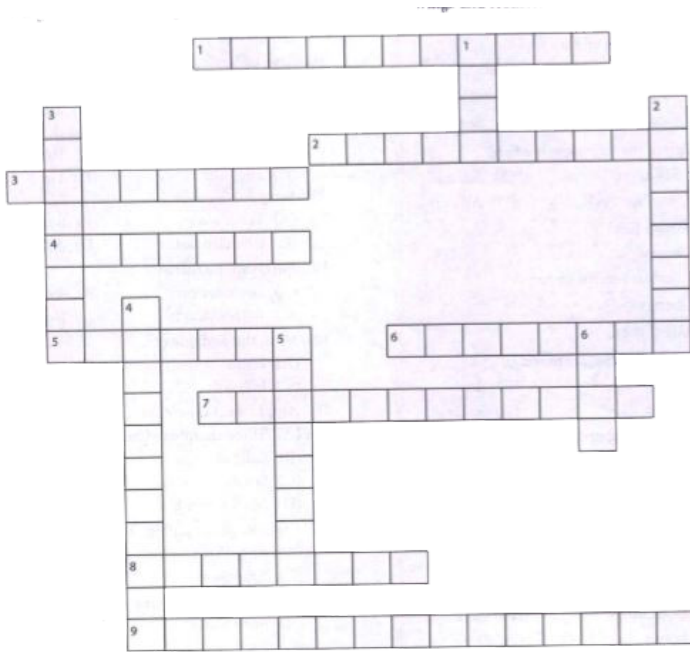
9. Class of vertebrates that includes fishes that have skeleton consisting of cartilage rather than bone

Down

1. Class of cold blooded vertebrate that lays eggs and has scales or plates on its skin
2. A vertebrate is an animal that has a

3. Class of warm-blooded animals with presence of diaphragm
4. Also known as being warm-blooded
5. Subclass of Mammalia which includes placental mammals
6. Vertebrate class that includes animals that

have wings and feathers



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2. Balanoglossus is also called as

A. Sea squirt

B. Cob jelly

C. Tongue worm

D. Lung worm

Answer: C



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3. Mammal's heart is

A. Myogenic

B. Neurogenic

C. Voluntary

D. Sympathetic

Answer: A



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4. Which of the following is a characteristic of chordates?

A. Closed circulatory system

B. Post anal tail

C. Both A and B

D. Dorsal heart

Answer: C



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5. Which is the most distinct character of fishes?

A. Gills

B. Scales

C. Lateral line organs

D. Paired fins and fin rays

Answer: D



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6. Torpedo is commonly known as

A. Sucker fish

B. Globe fish

C. Electric ray

D. Sea horse

Answer: C



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7. Which of the following is a fish?

A. Sea horse

B. Salmon

C. Bombay duck

D. All of these

Answer: D



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8. Mammals have

A. Breast

B. Body covered with hairs

C. Lungs

D. All of these

Answer: D



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9. Weberian ossicles are found in

A. Frogs

B. Birds

C. Fishes

D. Snakes

Answer: C



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10. in urochordata notochord is found in

- A. Tail of adult
- B. Test of adult
- C. Head of adult
- D. Tail of larva

Answer: D



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11. Retrogressive metamorphosis is present in

A. Herdmania

B. Amphioxus

C. Balanoglossus

D. All of these

Answer: A



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12. For their respiration, birds, whales and seals use

A. Book lungs

B. Gills

C. Lungs

D. Skin

Answer: C



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13. Birds lack

A. Pneumatic bones

B. Teeth

C. Eyelids

D. Neck

Answer: B



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14. National Bird of india is

A. Parrot

B. Peacock

C. Ostrich

D. Honey bird

Answer: B



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15. Milk glands are characteristic of

A. All vertebrates

B. All mammals

C. Only placental mammals

D. Only primates and ruminants

Answer: B



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16. Number of teeth found in a beak of bird is

A. Numerous

B. 20

C. 10

D. Nil

Answer: D



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17. Flight adaptation of bird is

A. Streamlined body

B. Feathery covering

C. Wings

D. All of these

Answer: D



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18. Jaws of birds are prolonged to form

A. Beak

B. Snout

C. Proboscis

D. Tusks

Answer: A



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19. Which animal is included in Aves?

A. Kangaroo

B. Hedgehog

C. Penguin

D. Bat

Answer: C



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20. Bony fish lives in

- A. Fresh water
- B. Sea water
- C. Brackish water
- D. All of the above

Answer: D



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21. Fins help the fish in

- A. Locomotion
- B. Steering
- C. Both A and B
- D. None of these

Answer: C



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22. Mark the odd one out.

A. Rohu

B. Sea horse

C. Jelly fish

D. Flying fish

Answer: C



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23. Amphibians do not have the following

A. Three chambered heart

B. Gills or lungs

C. Scales

D. Mucus glands

Answer: C



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24. Example of Amphibian is

A. Amphioxus

B. Myxine

C. Rohu

D. Ambyostoma

Answer: C



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25. Swim bladder is present in

A. Bony fishes

B. Cartilaginous fishes

C. Toad

D. Duck

Answer: A



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26. Bidder's canal is present in :

A. Male frog

B. Male rabbit

C. Female frog

D. Both B and C

Answer: A



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27. First amphibian appeared during which period

A. Permian

B. Carboniferous

C. Devonian

D. Silurian

Answer: B



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28. Frog is

A. Ammonotelic

B. Ureotelic

C. Uricotelic

D. None of these

Answer:



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29. The missing link between amphibians and reptiles is/are

A. Archaeopteryx

B. Ichthyostega

C. Seymouria

D. All of these

Answer:



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30. Which of the following is/are not a poikilotherm?

A. Turtle

B. Crocodiles

C. Frog

D. Ostrich

Answer:



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31. Which of the following is not poisonous snake?

A. Cobra

B. Krait

C. Viper

D. Python

Answer:



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32. Which of the following is/are the characteristic feature(s) exclusive of mammals?

- A. Presence of four-chambered heart
- B. Modified sweat glands
- C. Homeothermic condition
- D. Presence of diaphragm

Answer:



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33. Which of the following class includes animals that does not exhibit/demonstrate 'internal fertilization?

A. Mammalia

B. Reptilia

C. Amphibia

D. Aves

Answer:



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34. Identify the characteristic feature(s) of the superclass Pisces.

A. Have an 'S-shaped, two-chambered venous heart with one auricle

B. Fertilisation is internal

C. Have only an internal ear with two semicircular canals

D. Have a well-developed brain and possess 12 pairs of cranial nerves

Answer:



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35. Identify the correct pair/s from the following:

A. Amphibians - frogs, Ichthyophis,
crocodiles

B. Reptiles - Penguin, lizards, snakes

C. Mammals - whale, Platypus, Macropus

D. Aves - kiwi, Bat, Chelone

Answer:



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36. Which of the following is invertebrate?

A. A tunicate

B. A frog

C. A lancelet

D. A squid

Answer:



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37. Vertebrates are characterized by

(i) presence of true coelom

(ii) presence of notochord

(iii) a ventrally placed heart

(iv) the pharyngeal gill slits at some stage in
life cycle

(v) RBCs.

- A. (I) and (II) are correct
- B. (II) and (IV) are correct
- C. (I), (II), and (IV) are correct
- D. (I) and (III) are correct

Answer:



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38. Mammalian red blood cell has

- A. Single nucleus

B. Many nuclei

C. No nucleus

D. Beaded nucleus

Answer:



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Olympiad And Ntse Level Exercises

1. In the absence of a closed vascular system, how do sponges manage to distribute the

nutritive substances from choanocytes to rest of the cells ?

A. Through cell-to-cell diffusion

B. Through mesoglea which acts as the food reservoir and distribution system

C. Through the wandering cells, amoebocytes

D. Through cell-to-cell diffusion and amoebocytes

Answer: D



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2. A new species of aquatic chordate is discovered that closely resembles an ancient form. It has the following characteristics: external armour of bony plates, no paired fins and a suspension feeding mode of nutrition. In addition to these characteristics, it will probably have which of the following characteristics?

A. Legs

B. Metamorphosis

C. An amniotic egg

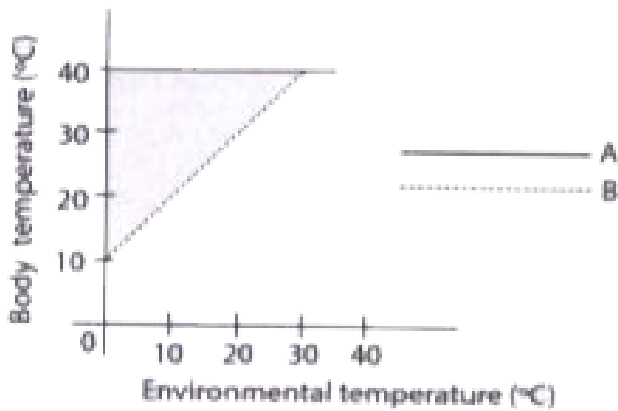
D. No jaws

Answer: D



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3. Which deduction can be made by analysing the following graph?



A. A is an endotherm and B is an ectotherm.

B. A is an ectotherm and B is an endotherm.

C. The body temperature of ectothermic animals increases during the day.

D. The environmental temperature has no influence on endothermic animals

Answer: A



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4. Mammals of species X reproduce without forming a placenta. You could determine to which of the three groups of mammals species X belongs if you knew any of the following except

A. how its reproductive and urinary systems connect to the outside of the body

B. what happens to its eggs after they are fertilised

C. how it controls its body temperature

D. how its young obtain milk from the mother

Answer: B



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5. Statement A: Archaeopteryx is a connecting link between reptiles and birds.

Statement B: It possesses pneumatic bones, an advanced character and opposable first toe of foot a reptilian character.

A. A is true and B is false

B. Both A and B are false

C. If both A and B are true, B is the correct

explanation of A

D. If both A and B are true, B is not the correct explanation of A

Answer: A



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6. Identify the incorrect statement.

A. The amphibian skin is smooth and moist with many glands, some of which may be poison glands, e.g., tropical tree frogs

B. All amphibians have a double circulation with both pulmonary and systemic circuits

C. The most derived/advanced amphibians, the anurans or frogs, have a four-chambered heart with two atria and two ventricles

D. All amphibians are ectothermal

Answer: C



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7. Which of the following animal is correctly matched with one of its characteristics and the taxon?

	Animal	Characteristics	Taxon
(A)	Millipede	Ventral nerve cord	Arachnida
(B)	Duckbill platypus	Oviparous	Mammalia
(C)	Silverfish	Pectoral and pelvic fins	Chordata
(D)	Sea anemone	Triploblastic	Pisces



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8. A researcher found few organisms. He/she wanted to study about the evolution of the organisms. Help the researcher to identify the correct sequence of their evolution.

A. Palaemon, Sepia, Asterias, Physalia

B. Physalia, Sepia, Palaemon, Asterias

C. Palaemon, Asterias, Physalia, Sepia

D. Physalia, Palaemon, Asterias, Sepia

Answer: A



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9. During embryonic development of frog and other vertebrates, thyroxine controls the development of and _____. For the production of thyroxine, the presence of _____ is required in the diet. Select the correct sequence of words. To complete the above passage, choose the best sequence of words from the following:

- A. Development, Circulatory system,
Muscles, Iodine

B. Metamorphosis, Circulatory system,

Muscles, Calcium

C. Metamorphosis, Bones, Nervous system,

Iodine

D. Development, Bones, Nervous system,

Iron

Answer: C



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10. A researcher found an organism with cellular grade of organisation. This organism could produce internal buds as a result of asexual reproduction. These buds were resistant when subjected to unfavourable conditions. It was then found that these internal buds as well as the endoskeleton of this organism were produced by a common type of cell. Identify the cell.

A. Amoebocyte

B. Pinacocyte

C. Choanocyte

D. Mesenchyme

Answer: A



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11. Which of the following statement about tunicates indicates that these animals are chordate?

A. Larvae show segmentation, radial symmetry and pseudocoelom.

B. Larvae have a dorsal hollow nerve cord, a post anal tail, pharyngeal silts and a notochord.

C. Larvae and adults both have a true coelom.

D. Larvae and adults both feed by filtering water and trapping small food particles.

Answer: B



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Challenging Exercise

1. What traits are there in mammals as a result of them being warm-blooded?



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2. An unfamiliar vertebrate is discovered in a tropical forest. It is observed to spend much of

its time in water, has four limbs, eyes, nostrils, and body temperature which varies with that of its surroundings.

(A) To which class of vertebrates might this animal belong?

(B) What other features would you look for to be reasonably sure which was the correct class?



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