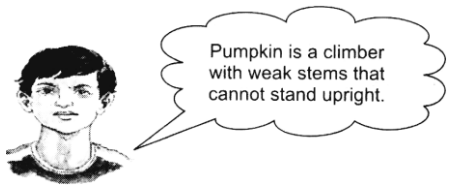
The World of Living

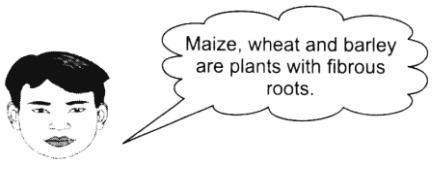
1. Read the following statements and select the option that correctly identifies true (T) and false (F) ones.
(i) The number of petals and sepals in a flower is always equal.
(ii) Roots absorb water and minerals from the soil.
(iii) Stamen forms the innermost whorl of a flower.
(iv) Petiole is the short stalk attached to the leaf.
(v) Calyx and corolla form essential whorls of the plant.

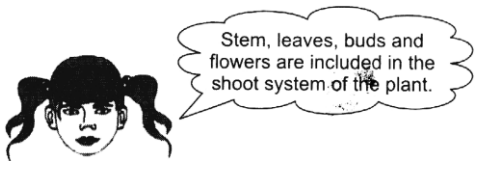
	(i)	(ii)	(iii)	(iv)	(v)
(a)	T	T	F	T	F
(b)	F	T	F	T	F
(c)	F	T	T	T	F
(d)	T	T	F	F	T

2. Which among these children made an incorrect statement?

(a)


(b)


(c)


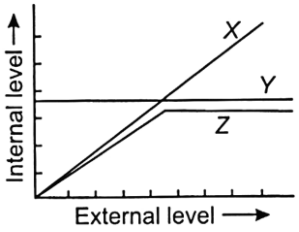
(d)


3. Select the incorrect match.

Type of vertebrae	No. of vertebrae
(i) Cervical vertebrae	7
(ii) Thoracic vertebrae	12
(iii) Lumbar vertebrae	4
(iv) Sacral vertebrae	5
(v) Caudal vertebrae	5

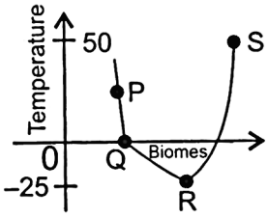
(a) (iii) and (v) only
(b) (ii), (iii) and (iv) only
(c) (i), (iii) and (v) only
(d) (ii) and (v) only

4. The given graph represents how three different living organisms (X, Y and Z) cope with the external environmental conditions.
Study the graph and select the correct option regarding X, Y and Z.



(a) X could be a mammal.
(b) Y could be a bird.
(c) Z could be a mammal.
(d) X could be a bird.

5. The given graph shows temperature gradient through different biomes of Earth (P, Q, R and S).



Refer to the given graph and select the incorrect option regarding P, Q, R and S.
(a) Plants inhabiting S may have photosynthetic stems and leaves reduced to spines.
(b) Animals inhabiting R possess thick layer of subcutaneous fat.
(c) Animals inhabiting P show arboreal adaptations and often use camouflage and startling colouration for protection against enemies.
(d) Plants inhabiting Q have large flat leaves and animals inhabiting Q excrete concentrated urine and are nocturnal.

6. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
(A) Hinge joint	(i) Neck joint

(B) Gliding joint	(ii) Hip joint
(C) Pivot joint	(iii) Knee joint
(D) Ball and socket joint	(iv) Wrist joint

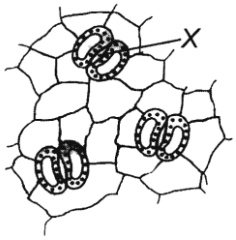
:

(a) (A) - (iii), (B) - (iv), (C) - (i), (D) - (ii)
(b) (A) - (iv), (B) - (i), (C) - (iii), (D) - (ii)
(c) (A) - (i), (B) - (ii), (C) - (iv), (D) - (iii)
(d) (A) - (ii), (B) - (iii), (C) - (i), (D) - (iv)

7. Read the following statements (i)-(v), each with one or two blanks,
(i) (a) have liquid skeletons.
(ii) The last (b) pairs of ribcage bones that are not joined to the breast bone are called (c).
(iii) The longest bone of human body is (d).
(iv) (e) is strong, flexible band that holds ;bones together at the joints.
(v) (f) is a smooth elastic tissue that covers and protects the ends of long bones at the joints.

Which of the following options correctly fills any two of these blanks?
(a) (a)-Earthworm, (d)-Humerus
(b) (e)-Ligament, (f)-Cartilage
(c) (b)-Four, (c)-Floating ribs
(d) (e)-Tendon, (f)-Ligament

8. The structure marked as X in the given figure is not involved in ____.

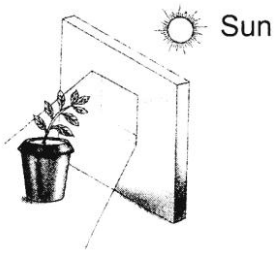


(a) Gaseous exchange during photosynthesis
(b) Gaseous exchange during respiration
(c) Evaporation of water during transpiration
(d) None of these

9. Refer to the given figures X and Y; and select the incorrect statement regarding them.

(a) In X, stem is modified to form tendril whereas in Y leaf is modified to form tendril.
(b) Both X and Y are weak-stemmed plants.
(c) X type tendrils are also found in passion flower whereas Y type tendrils are also found in Gloriosa.
(d) In X, leaf is modified to form tendril whereas in Y, stem is modified to form tendril.

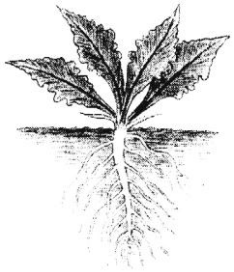
10. The given figure shows an example of____.



(a) Phototropism (b) Geotropism
(c) Autotropism (d) Photosynthesis

11. Which of the following statements is correct?
(a) The soft substance present inside the bones is called bone marrow.
(b) Pivot joint allows the maximum movement in all planes whereas hinge joint allows the least movement in one plane only.
(c) The only movable bone in skull is the upper jaw bone.
(d) Snakes have hollow bones and birds have flexible backbones.

12. Which of the following statements hold true for the root system shown in the given figure?



(i) It is a fibrous root system.
(ii) The branches that arise from the main root are called fibrous roots.
(iii) It \s a tap root system.
(iv) Examples of this type of root system are pea, tulsi, radish, carrot and turnip.

(a) (i) and (iii) only (b) (ii) and (iv) only
(c) (iii) and (iv) only (d) (ii) and (iii) only

13. The given table shows some characteristics of herbs, shrubs and trees. Which of the given points is/are incorrect?

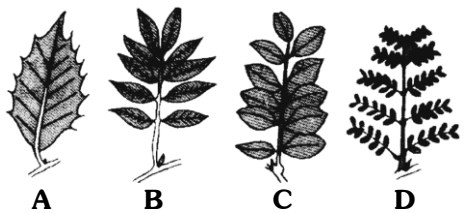
	Features	Herbs	Shrubs	Trees
(i)	Size	Very small, usually less than 1 m high	Medium sized, usually 1-3 m high	Tall, generally more than 3 m high
(ii)	Nature of stem	Green and tender stems with few branches	Hard and very thick stem with branches on the upper part of the stem	Hard stem but not very thick; branches arise near the base of the stem
(iii)	Examples	Grass, tomato, wheat, mint	Hibiscus, lemon, rose, jasmine	Gulmohar, neem, peepal, mango

(a) (i) only
(b) (ii) only
(c) (iii) only
(d) (ii) and (iii) only

14.

What is a common character of the above shown animals?
(a) They all live in water.
(b) They all lack backbone.
(c) They all have scales on their body.
(d) They all lay eggs to reproduce.

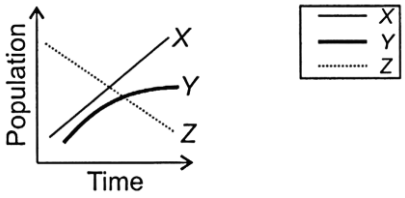
15. Leaves may be simple or compound. Which of the given figures show(s) compound leaves?



(a) A only
(b) B, C and D only
(c) A and D only
(d) All of these

Achievers Section (HOTS)

16. Small populations of three types of organisms; X, Y and Z were kept in captivity. Plenty of plants were present in that area. The change in the population of these organisms with time was plotted in the graph as shown here.



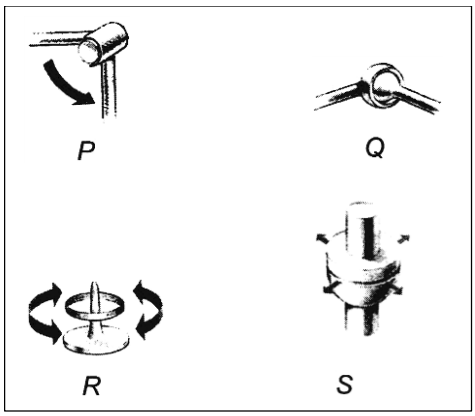
Which of the following conclusion is incorrect regarding their eating habits?
(a) X could be a carnivore that feeds on Z but not on Y.
(b) Both X and Y could be herbivores and Z could be a carnivore whose population declines as it does not prey on both X and Y.
(c) If X and Y are herbivores, then X has higher reproductive potential than Y.
(d) None of these

17. Refer to the given paragraph. The two main types of root are X and Y. X roots are mostly found in plants having leaves with reticulate venation, while Y roots are mostly found in plants having leaves with parallel venation.
Select the incorrect statement regarding X and V.
(a) Radish, turnip and carrot are modifications of X.
(b) X is found in gram while Y is found in barley.
(c) X spreads horizontally hence cannot provide strong anchorage whereas Y penetrates very deep into the soil hence provides strong anchorage.
(d) In Y, primary root is short-lived while X has persistent primary root.

18. Refer to the given paragraph and answer the following question.
Plant P is the only source of food for the caterpillars of a butterfly species, Plant P depends on the adults of the butterfly species Q for pollination. In fact, animal Q is the only pollinator of plant P in nature. Animal R feeds exclusively on the caterpillars of the butterfly species, Q. Animal R in turn is the prey of animal S. Which of the following is likely to happen if animal S is hunted to extinction?
(a) Animal R will continuously feed on animal Q which may lead to coextinction of both P and Q with time.
(b) The populations of both animals Q and R will increase, however the population of plant P will decrease with time.
(c) Population of animal R will increase while population of animal Q will decrease with time.

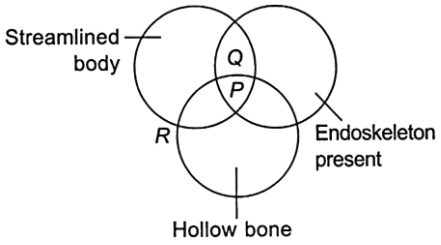
(d) Both (a) and (c)

19. Refer to the given figures of machines P, Q, Rand S which represent different joints of our body. Identify the joints according to movement of these machines and select the correct option.



(a) P type of joint is found between the upper arm bone (humerus) and shoulder.
(b) Q type of joint is present in our elbow and knee and allows movement in only one plane.
(c) S type of joint allows side to side as well as backward and forward movement, e.g. ankle and wrist joints.
(d) R type of Joint allows the highest freedom of motion e.g., hip joint.

20. Refer to the given Venn diagram and select the incorrect statement regarding P, Q and R.



(a) R has three pairs of jointed legs which help it to walk, run and climb.
(b) Q has paired and unpaired fins that, help in movement in water.
(c) P has special air sacs connected to the lungs which aid in respiration process.
(d) Q is a shelled animal that possesses a muscular structure called foot which produces a series of wave like movements.

Answer key

1. B	**2.** B	**3.** A	**4.** B	**5.** D
6. A	**7.** B	**8.** D	**9.** D	**10.** A
11. A	**12.** C	**13.** B	**14.** B	**15.** B
16. D	**17.** C	**18.** D	**19.** C	**20.** D

HINTS & EXPLANATIONS

1. (b): The number of petals and sepals in a flower is not always equal. Pistil forms the innermost whorl of a flower. Calyx and corolla form non-essential or accessory whorls of the flower.

2. (b): Pumpkin is not a climber, it is a creeper which has a weak stem and cannot stand upright. It spreads along the ground.

3. (a): Lumbar vertebrae - 5
Caudal vertebrae - 4

4. (b): In birds and mammals, the temperature of the body does not vary with the temperature of the external environment. It remains constant. So, 'V could be a bird or mammal.

5. (d) Not Available

6. (a) Not Available

7. (b): Earthworms (a) have liquid skeletons. The last two (b) pairs of ribs are not attached to the breast bone and are called floating ribs (c). Femur (d) is the longest bone of human body.

8. (d): Structure marked as 'X' in the given figure represents stomata. They help in gaseous exchange during respiration and photosynthesis. They also help in evaporation of water from the leaves (transpiration).

9. (d): The given figures, X and Y represent stem tendrils of grapevine and leaf tendrils of pea plant respectively.

10. (a): The figure depicts phototropism. The tip of the plant bends towards the direction from where the light is coming in. This response of a plant to light is known as phototropism.

11. (a): Bone marrow is a soft substance present inside the bones and blood cells are made here. Ball and socket joint allows the maximum movement in all the directions.
Hinge joint provides back and forth movement in one plane similar to door hinges. Pivot joint allows one bone to rotate over the other. The only movable bone in skull is the lower jaw bone. Birds have hollow bones that make them light weight and help to fly. Snakes have flexible backbones.

12. (c): The given figure is showing tap root system. Tap root is the main root and many lateral roots arise from it. Pea, tulsi, radish, carrot and turnip are examples of plants that have tap root system.

13. (b): The stem of herbs is green and tender and has few branches. Shrubs have hard woody stems which are not very thick and the branches arise near the base of the stem. Trees, on the other hand, have hard and thick stems and the branches arise on the upper part of the stem.

14. (b): The backbone or the vertebral column is a long, bony, rod-like structure, which extends from the base of the skull to the lower back. The animals which possess the backbone are called vertebrates and the ones which do not possess it are called invertebrates. Ant, spider, octopus, amoeba and starfish, are all invertebrates.

15. (b): When a leaf is divided into number of leaflets and all the leaflets are attached to a common leaf stalk, it is known as compound leaf. Figures 'b', 'c' and 'd' are compound leaves. On the other hand, a simple leaf is not divided into leaflets and is directly connected to the stem. Figure 'a' is a simple leaf.

16. (d) Not Available

17. (c): In the given paragraph, X and Y refer to tap roots and fibrous roots respectively. Tap roots (X) penetrate very deep into the soil hence provide strong anchorage to the plant whereas fibrous roots (Y) are shallow and grow horizontally in the soil hence they cannot provide very strong anchorage to the plant.

18. (d): According to the given paragraph, P and Q show mutual relationship, i.e. if Q will extinct then it will lead to extinction of P as well and vice versa. If animal S is hunted to extinction, then population of animal R will start increasing abnormally in the absence of its predator. This uncontrolled growing population of R will feed more on Q population which may ultimately lead to Kits extinction with time. As both P and Q 'depend on each other for existence hence, P population will start decreasing and ultimately get extinct with time.

19. (c): The given figures P, Q, R and S represent hinge joint, ball and socket joint, pivot joint and gliding joint respectively. Hinge joint (P) is present in our elbow and knee and allows movement in only one plane.

Ball and socket joint (Q) allows highest freedom of motion, e.g., shoulder joint (between humerus and shoulder) and hip joint (between femur and hip bone). Pivot joint (R) also called rotatory joint allows rotatory movement around a single axis. The moving bone rotates within the ring formed from second bone. Joints between first and second cervical vertebrae exemplify pivot joint.

20. (d): In the given Venn diagram, P, Q and R could be bird, fish and cockroach respectively.