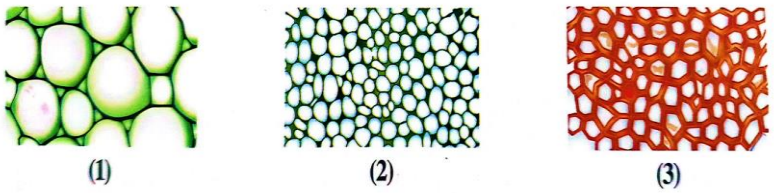
Support in Plant

1) Study the opposite figure then deduce:
Which of the following cells indicates structural support only?

a. Cell (1).
b. Cell (2) and (3).
c. Cell (3).
d. Cell (1) and (2).



2) From the examples of the structural support in the plant is ……

a. The sieve tubes and the companion cells.
b. The collenchyma and the sclerenchyma cells.
c. The parenchyma cells.
d. The meristematic cells.

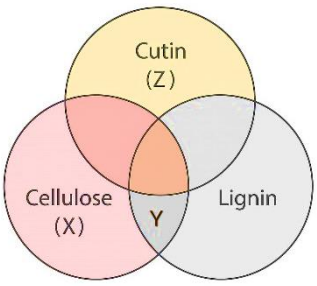
3) The opposite figure shows some of the deposited substances on the walls of some plant cells as a structural support, examine it and answer:

(1) Cells (Y) are expected to be found in the ..... tissue.

a. parenchyma. b. collenchyma.
c. sclerenchyma. d. cork.

(2) Cells (Z) are expected to exist in .....

a. root epidermal cells. b. leaf epidermal cells.
c. all parts of the plant. d. internal leaf tissue.



4) From the substances that deposits on the cell wall of the plant cells to prevent the loss of water is ……

a. Lignin only. b. Cellulose and lignin.
c. Suberin only. d. Cutin and Suberin.

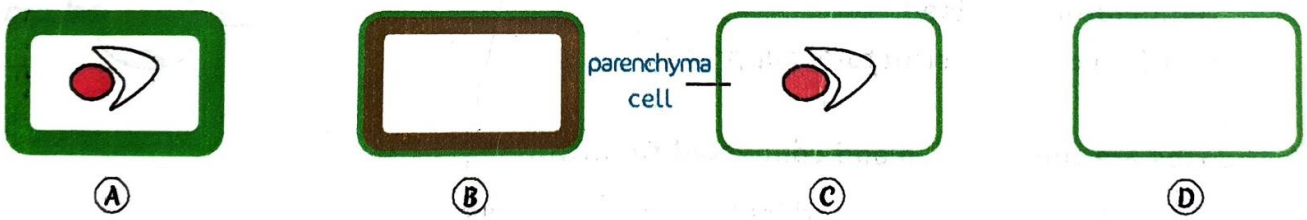
5) The cell wall of the plant cell gains hardness, if …….. is deposited on it.

a. Cutin. b. Suberin. c. Lignin. d. All the previous.

6) The presence of ……. in the cell wall of the plant cell increases its elasticity, but it doesn't prevent the loss of water.

a. Cutin. b. Cellulose. c. Lignin. d. Suberin.

7) If the green lines express the walls of the plant cell, the colored circles express its nucleus, and the triangle is the vacuole. Which of the following cells is likely to have structural support by deposition of cellulose only?



8) What is the reason for non-transmission of water into the sclerenchyma cells by osmosis phenomenon?

a. The presence of cutin.
b. The absence of protoplasm.
c. The presence of cellulose.
d. The presence of lignin.

9) Which of the following tissues participate in structural support in plant?

	Xylem tissue	Sclerenchyma tissue	Parenchyma tissue	Collenchyma tissue
a	✓	✓	✗	✗
b	✗	✗	✓	✓
c	✓	✓	✓	✗
d	✓	✓	✗	✓

10) Stone cells are made up of a tissue whose cells are ……

a. Living collenchyma cells
b. Living sclerenchyma cells
c. Dead collenchyma cells
d. Dead sclerenchyma cells

11) If the opposite figure represents a living cell has a structural support, which of the following substances is involved in the composition of (X) layer?

a. Suberin.
b. Lignin.
c. Cutin.
d. Lignin and Suberin.

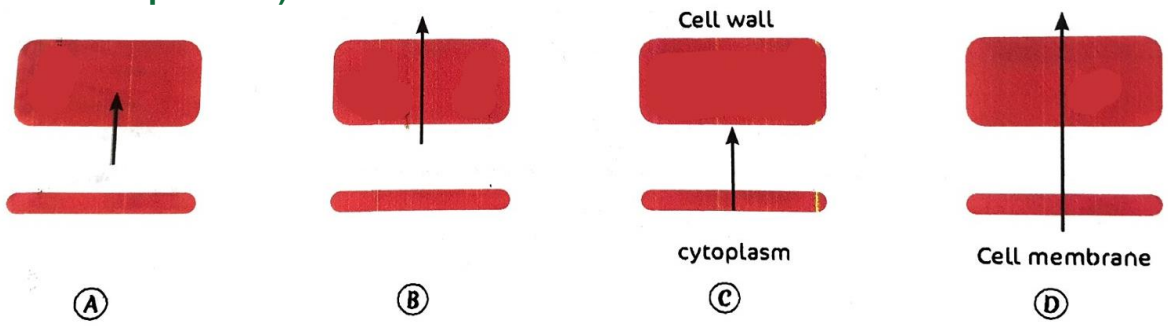
12) ……. are from living cells that have a structural support in the plant.

a. Sclerenchyma cells.
a. Parenchyma cells.
c. Collenchyma cells.
d. Root epidermis cells.

13) What is the substance that covers the epidermis of stems and leaves of bean plant?

a. Suberin.
b. Lignin.
c. Cutin.
d. Cellulose.

14) Which of the following figures represents the direction and deposition of cutin? (Note: The start of the arrow indicates the site of formation, and the end indicates the site of deposition)



15) Which of the following substances act(s) on increasing the rigidity of plant cell walls?

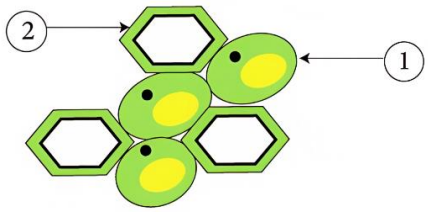
a. Cutin only.
b. Cellulose only.
c. Suberin only.
d. Cellulose and lignin.

16) Which o the following polymers is present in the vascular tissue of plant and provides it with more structural support?

a. Lignin. b. Cutin. c. Cellulose. d. Keratin.

17) The opposite figure illustrates some cells of pear fruit, which of the following describes the cells of this fruit which are referred by the numbers (1) and (2)?

a. both cells (1) and (2) have structural support.
b. Cell (1) only has structural support.
c. The two cells (1) and (2) lose the support if the temperature is raised.
d. Cell (2) only has structural support



18) Which of the following choices doesn't agree with the rest of choices according to the occurrence of support in the plant?

a. Cellulose. b. Chitin. c. Lignin. d. Suberin.

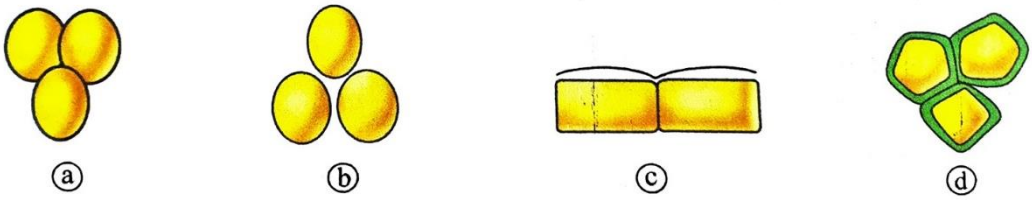
19) Which of the following act on maintaining the internal tissues of wooden trees?

a. Cellulose and lignin. b. Cutin and cellulose.
c. Cutin and suberin. d. Lignin and suberin.

20) Plum fruit maintain their content of water, because its outer layer contains …… substance.

a. suberin. b. cellulose. c. cutin. d. lignin.

21) Which of the following tissues prevents water loss in plants under changing of external environmental conditions?

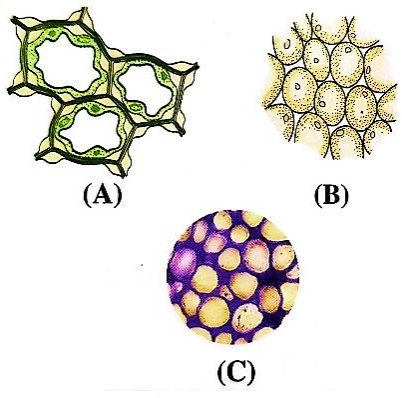


22) Which of the following substances whose presence in the plant cell walls increases their flexibility and rigidity, but doesn't prevent water permeation?

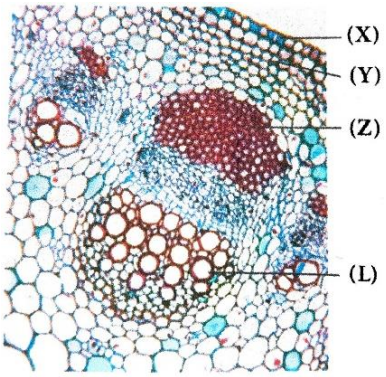
a. Cutin. b. Suberin. c. Lignin. d. Cellulose.

23) The opposite figures illustrate types of plant tissues, which of them contain (s) depositions of cellulose?

a. (A).
b. (B).
c. (A) and (B).
d. (A) and (C).



24) The opposite figure shows a cross-section of the stem of a young dicotyledonous plant.
Which of the tissue shown have cell walls thickened with a water-permeable substance?

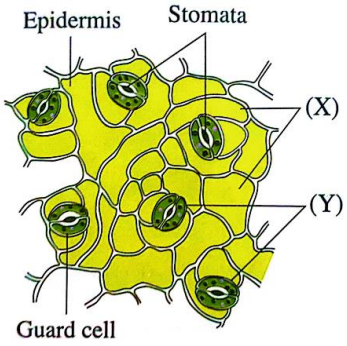


a. (X)
b. (Y)
c. (Z)
d. (L)

25) The presence of chloroplasts in some collenchyma cells indicates that the thickening of these cells ……

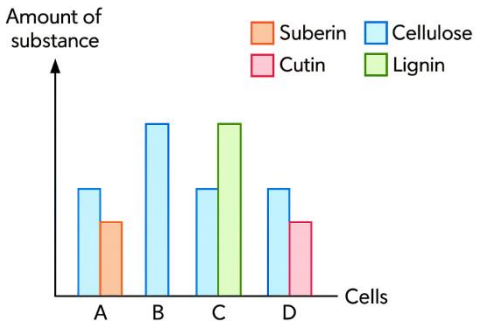
a. Prevents water loss from these cells while allowing water to permeate into them.
b. Prevents both water loss from and water permeation into these cells.
c. Allows both water loss from and water permeation into these cells.
d. Allows water loss from but prevents water permeation into these cells

26) From the opposite figure which represents the lower surface of a herbaceous plant leaf:
What is the reason for maintaining the cells (X) their characteristic shape?



a. The presence of cellulose wall.
b. The absence of plastids.
c. The deposition of lignin in their walls.
d. The deposition of suberin in their walls.

27) Study the opposite graph that illustrates the amount of the substances that are present in some plant cell walls, what are the cells that express the stone cells in plant? (2nd session-21)



a. A
b. B
c. C
d. D

28) What makes collenchyma a supporting tissue that makes the plant organs harder and stronger? (Experimental 2025)

a. The deposition of cellulose on its cell walls.
b. The addition of cellulose and lignin to its cell walls.
c. Being thickened by cellulose and its distribution.
d. Being dead tissue and its position.

29) The outer layers of the stem are thickened by the deposition of ..... **(Experimental 2025)**

a. Cutin and lignin.
b. Suberin and cutin.
c. Cellulose and suberin.
d. Cellulose and cutin.

30) Which represents the main role of cutin and suberin in plants? **(Experimental 2025)**

a. Providing the support to vascular tissues.
b. Maintaining the shape of cell walls.
c. Acting as impermeable barriers to water.
d. Determining the substances that enter the plant cells or leave them.

31) What is the type of support that protects the aerial parts of the plant from drought?

a. Deposition of cellulose on the plant stem cell walls. **(Experimental 2025)**
b. Deposition of lignin on the plant leaf cell walls.
c. Deposition of cutin on the leaf epidermis.
d. Deposition of cutin or suberin on the plant stem surface.

32) What is the main function of support materials in plants? **(Experimental 2025)**

a. Increasing the rate of transport of materials throughout the plant.
b. Increasing flexibility and allowing movement of the plant.
c. Maintaining the shape of the plant and of plant cells.
d. Controlling the entry and exit of materials into and from the plant cells.

33) The tissues that support plants are ..... **(Experimental 2025)**

a. Stomata and sclerenchyma tissue
b. Parenchyma and sclerenchyma tissues.
c. Collenchyma and sclerenchyma tissues
d. Parenchyma and collenchyma tissues.

Essay Questions

1) What happens when:

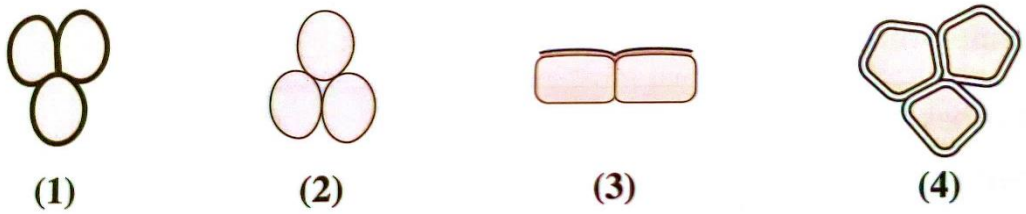
The fibers and stone cells lose the lignin that is deposited in their walls?

.....
.....

2) What is the difference between: Suberin and cellulose?

.....
.....
.....
.....

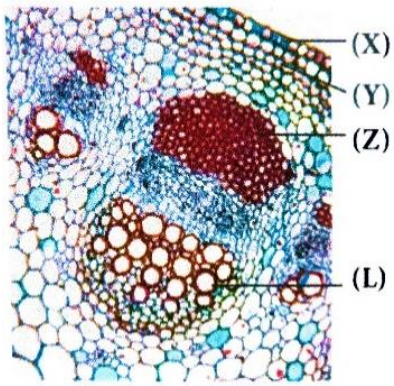
3) The following figures illustrate some types of plant cells:



(a) Which cells provide the plant with structural support only?

(b) Which cells whose support isn't affected by the water content of the plant?

4) The figure shows a cross-section of the stem of a young dicotyledonous plant.
Study it carefully and deduce:



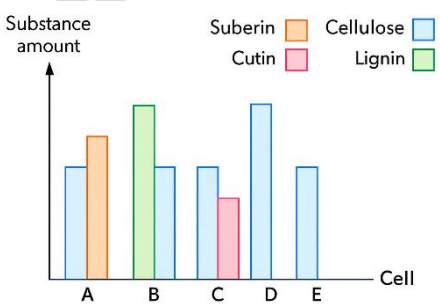
(a) What is the letter and name of the tissue(s) that provide strength and rigidity to the plant?

.....

(b) Which of the tissues shown contain cells that lack nuclei?

.....

5) The opposite graph illustrates the amount of substances that are present in the walls of some plant cells:



(a) What are the cells that represent stem epidermis of plant?

.....

(b) What are the cells that represent the xylem tissue?

.....

(c) What are the cells that represent collenchyma tissue?

.....

(d) What are the cells that cover the woody tree trunk?

.....

Support in Human (Axial skeleton)

1) Which of the following vertebrae is the largest lumbar vertebra in size?

a. Vertebra no. (21). b. Vertebra no. (22).
c. Vertebra no. (23). d. Vertebra no. (24)

2) The size of vertebra no. (20) compared to the size of vertebra no. (19) of the vertebral column of human is …….....

a. smaller. b. equal. c. slightly larger. d. much larger.

3) The vertebra that mediates the vertebral column is found in the ……. region.

a. cervical. b. thoracic. c. lumbar. d. sacral.

4) What is the number of bones of the vertebral column in human?

a. 24 b. 26 c. 28 d. 33

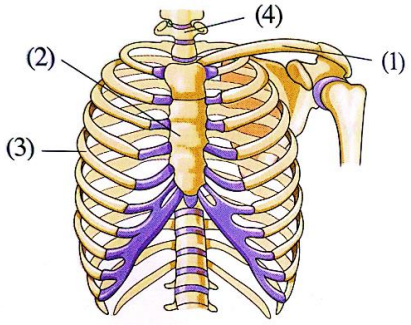
5) Which of the following is correct about the last two groups of vertebral column vertebrae?

a. They are similar in the number of bones.
b. They are similar in the number of vertebrae.
c. They are connected to the two ilia.
d. They have equal sizes.

6) What does the vertebra no. (27) of the vertebral column represent?

a. The second lumbar. b. The third sacral.
c. The fourth coccygeal. d. The second sacral.

7) In the opposite figure, which of the following structures doesn't belong to axial skeleton?

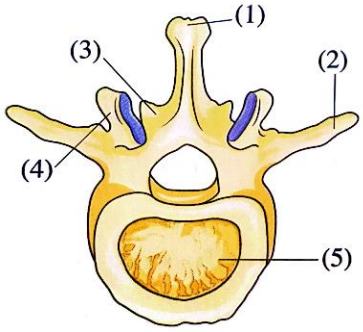


a. (1).
b. (2).
c. (3).
d. (4).

8) What is the type of vertebra no. (18) of vertebral column?

a. Lumbar b. Coccygeal c. Sacral d. Thoracic

9) In the opposite figure, which of the following numbers represent the parts that are responsible for the movement of the vertebral column?



a. (1) and (2).
b. (2) and (3).
c. (3) and (4).
d. (4) and (5).

10) In which are the thoracic vertebrae similar to the lumbar vertebrae?

a. Number. b. Direction of curvature.
c. Size. d. Number of processes in the vertebra.

11) The upper end of the vertebral column is connected to ……

a. the facial part of the skull. b. the first rib in the thoracic cage.
c. the cerebral part of the skull. d. floating ribs from the rib cage.

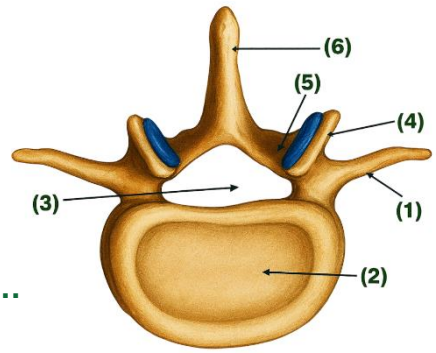
12) The vertebra that mediates the cervical vertebrae is vertebra no. …….

a. (3). b. (4). c. (5). d. (7).

13) Which of the following represents the direction of curvature of groups of the cervical, thoracic and lumbar vertebrae respectively?

a. Anteriorly / Posteriorly / Anteriorly.
b. Posteriorly / Anteriorly / Anteriorly.
c. Anteriorly / Anteriorly / Posteriorly.
d. Posteriorly / Posteriorly / Anteriorly.

14) Look at the opposite figure which represents the vertebra no. (21) in the vertebral column, then answer:



(1) The part that protects the spinal cord is …….

a. (1). b. (2). c. (3). d. (4).

(2) The part(s) that articulate with the vertebra no. (20) is ……

a. (1). b. (4). c. (5). d. (6).

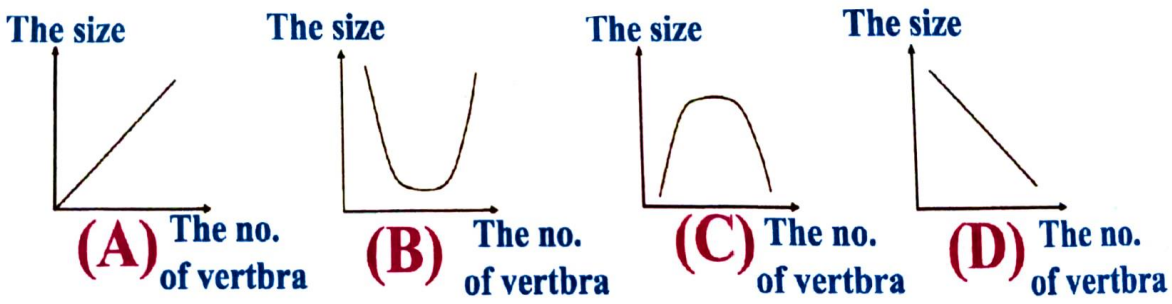
(3) A posterior bony process that directs downwards is ……..

a. (1). b. (4). c. (6). d. (5).

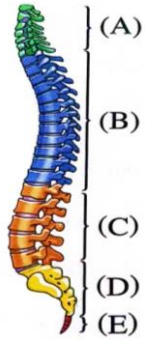
15) The superior articulating process in third thoracic vertebrae is attached with ……

a. The superior articulating process in the fourth thoracic vertebra.
b. The inferior articulating process in the fourth thoracic vertebra.
c. The inferior articulating process in the second thoracic vertebra.
d. The superior articulating process in the second thoracic vertebra.

16) Which graphs express the relation between the number of vertebra and its size according to the arrangement in the vertebral column?



17) Which of the following groups participate in the connection of the opposite figure with the rest parts of axial skeleton?

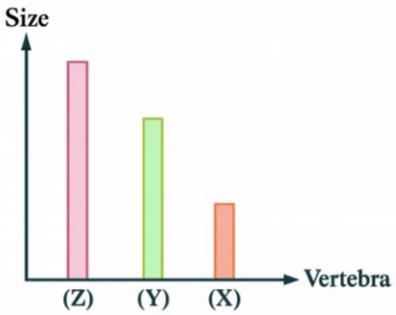


a. (A) and (B).
b. (B) and (C).
c. (D) and (E).
d. (B) and (D).

18) The first thoracic vertebra articulates with ..... bones.

a. 1 b. 2 c. 3 d. 4

19) The opposite graph represents the size of three types of articulating vertebrae in human:



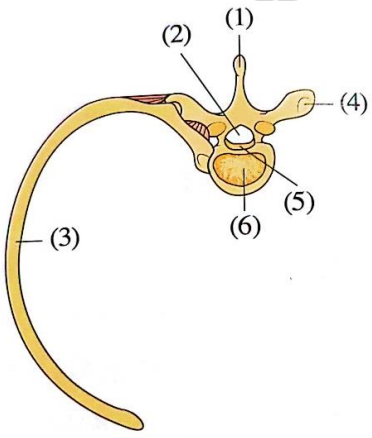
(1) What do the vertebrae (X), (Y) and (Z) represent respectively?

a. Lumbar / Cervical / Thoracic.
b. Cervical / Thoracic / Lumbar.
c. Lumbar / Thoracic / Cervical.
d. Cervical / Lumbar / Thoracic.

(2) What is the number of vertebral column's vertebrae of the type (Y)?

a. 4 b. 5 c. 7 d. 12

20) The opposite figure represents a part of the axial skeleton in human, study it, then answer:



(1) This structure is present in the ..... region.

a. sacral b. lumbar
c. thoracic d. cervical

(2) What is the number of the part inside which one of the central nervous system components is present?

a. (1). b. (2).
c. (5). d. (6).

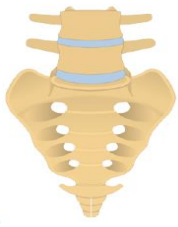
(3) What does the part no. (4) represent?

a. Neural spine. b. Superior articulating process.
c. Inferior articulating process. d. Transverse process.

21) What is the number paired processes in the thoracic bony vertebra?

a. 2 b. 3 c. 6 d. 7

22) The number of bones that form the figure is .....

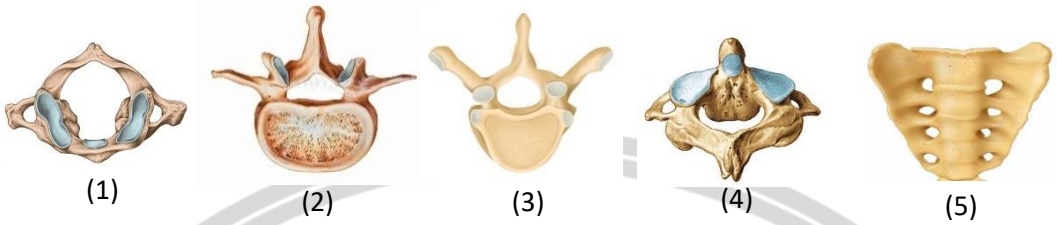


a. 2
b. 4
c. 8
d. 11

23) Which of the following vertebrae upon which the upper part of body is based during practicing weight lifting sport?

a. Lumbar. b. Cervical. c. Coccygeal. d. Thoracic.

24) Study the opposite figure, then answer:

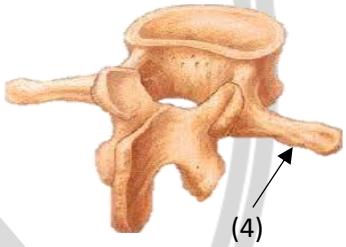


	(1)	(2)	(3)	(4)	(5)
a	Connected to the skull	The largest in number	The largest in size	The second vertebra	Their number is 5
b	First vertebra	The largest in size	The largest in number	The second vertebra	Their number is 5
c	Last vertebra	Broad and flat	Their number is 10	The first vertebra	The second vertebra
d	Its number is 19	Their number is 5	It is medium in size	The first vertebra	The first cervical

25) Study the figure then answers:

In this figure, the structure (4) represents ……...

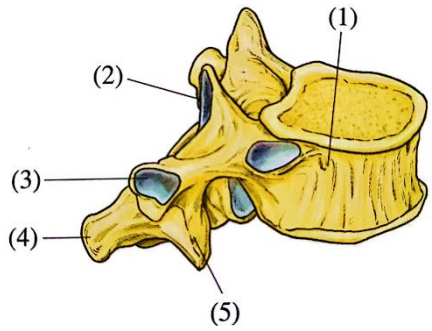
a. Right articulating process.
b. Left transverse process.
c. Left articulating process.
d. Right transverse process.



26) In which are the cervical vertebrae similar to lumbar vertebrae?

a. Shape. b. Size. c. Articulation. d. Number.

27) The opposite figure represents a lateral view of a bony vertebra, if this vertebra is no. (22) in the vertebral column, answer:



(1) Which of the following structures connects this vertebra with the bony vertebra no. (21)?

a. (2). b. (3).
c. (4). d. (5).

(2) Which of the following structures connects this vertebra with the bony vertebra no. (23)?

a. (2). b. (3). c. (4). d. (5).

28) Which of the following represents two vertebrae that differ in general shape?

a. (1) and (2). b. (6) and (7). c. (18) and (19). d. (20) and (21).

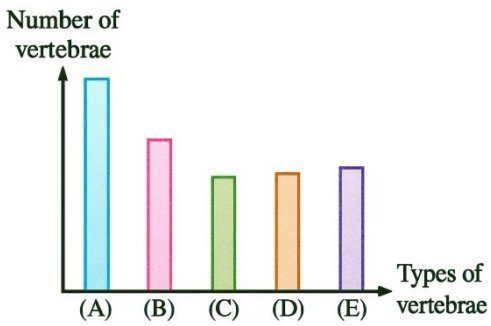
29) Number (12) in vertebral column indicate the number of ……

a. Floating ribs b. Thoracic vertebra c. Lumber vertebra d. Cervical vertebra

30) The spinal ring is a bony ring that is attached to the posterior part of the ……

a. second rib. b. skull.
c. sternum. d. centrum of the lumbar vertebra.

31) The opposite graph represents the types of vertebrae of the vertebral column, study it, then answer:



(1) If you know that (E) refers to the sacral vertebrae, which of the following represents the correct arrangement of the vertebral column vertebrae from up to down?

a. (B) / (A) / (C) / (D) / (E).
b. (D) / (C) / (E) / (A) / (B).
c. (B) / (A) / (D) / (E) / (C).
d. (B) / (A) / (D) / (C) / (E).

(2) The vertebra that articulates with the skull belongs to ……

a. (A). b. (B). c. (C). d. (d).

(3) What are the vertebrae that share in the formation of the thoracic cage?

a. (A). b. (B). c. (C). d. (d).

32) What is the ratio between the number of articulating vertebrae to that of the fused vertebrae?

a. 3 : 8 b. 9 : 7 c. 8 : 3 d. 3 : 5

33) What is the number of articulating vertebrae in the human trunk region?

a. 24 b. 17 c. 12 d. 5

34) The number of vertebrae that separate between the 6th cervical vertebrae and the 2nd lumbar vertebrae is ……..

a. 13 b. 15 c. 14 d. 12

35) The first broad and flat vertebra in the human vertebral column is ……

a. 1 b. 8 c. 19 d. 25

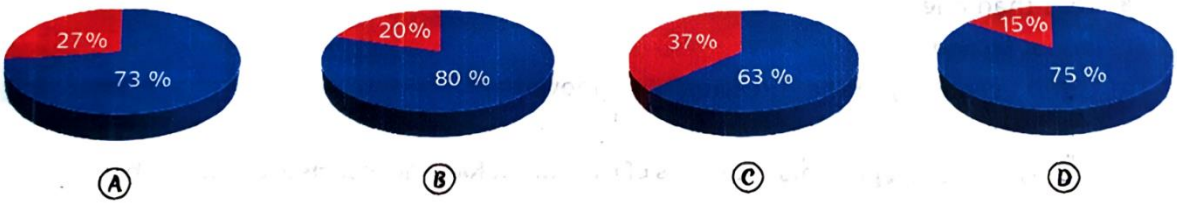
36) The bony vertebra no. (17) articulates with the bony vertebra no. (18) through the connection of the two ……..

a. superior articulating processes of vertebra no. (17) with the two inferior articulating processes of vertebra no. (18).
b. inferior articulating processes of vertebra no. (17) with the two superior articulating processes of vertebra no. (18).
c. superior articulating processes of each of the two vertebra no. (17) and (18).
d. inferior articulating processes of each of the two vertebra no. (17) and (18).

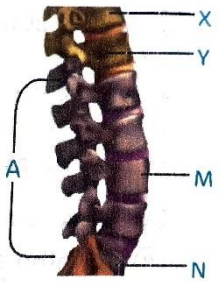
37) How many processes participate in the articulation of three lumbar vertebrae with each other?

a. 4 b. 8 c. 12 d. 16

38) In terms of number, which of the following figures expresses the ratios between the fused to the articulating vertebrae of the vertebral column?
(Note all ratios are approximated to the nearest unit)



39) The opposite figure represents part of the vertebral column. Examine it then answer
(Note that vertebrae (A) face the abdominal cavity)



(1) The bony vertebra (M) is far from the median vertebra that bisect the vertebral column by ……. bony vertebrae.

a. (3).
b. (4)
c. (5).
d. (6).

(2) Which of the following alternatives is <u>not</u> represent the bony vertebrae (X) and (Y)?

a. They are from the bones of the rib cage.
b. They do not form cartilaginous joints.
c. They are attached to ribs that are not attached to any other bones.
d. They have more joints than cervical vertebrae.

(3) Bone (N).....

a. It is considered the smallest vertebrae of the vertebral column.
b. Does not form a cartilaginous joint with the next vertebra.
c. There are two bones of the vertebral column below it.
d. Its superior articular process is articulated with a fused vertebra.

40) All of the following are correct about lumbar vertebrae <u>except</u> .....

a. They have cartilaginous joints. **(Experimental 2025)**
b. They are large in size.
c. They face the abdominal region.
d. They are connected to the last two pairs of ribs.

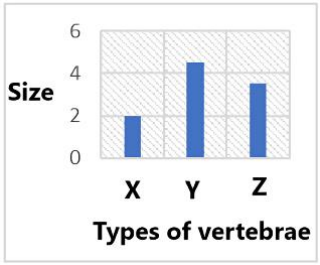
41) Vertebra number 15 is connected to vertebra number 16 through .....

a. Cartilaginous joint and two upper articulating processes. **(Experimental 2025)**
b. Cartilaginous joint and two lower articulating processes.
c. Two upper articulating processes and two lower articulating processes.
d. Cartilaginous joint and two upper and two lower articulating processes.

42) Which of the following skeleton structures are directly connected to its vertebral column? **(Experimental 2025)**

a. Skull and upper limbs.
b. Thoracic cage and skull.
c. Upper and lower limbs.
d. Upper limbs and pectoral girdle.

43) Study the diagram of three types of articulating vertebrae in humans. then conclude: How many vertebrae are of type (Y)? **(Experimental 2025)**

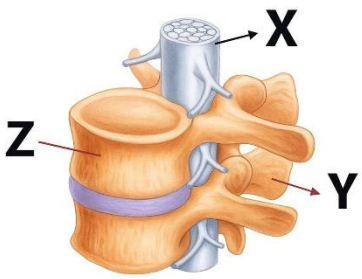


a. 12
b. 5
c. 7
d. 4

44) What is the region at which the upper limbs are attached to the vertebral column of the human skeleton? **(Experimental 2025)**

a. Cervical region
b. Thoracic region
c. Cervical and thoracic regions
d. Thoracic and lumbar regions

45) If the opposite figure represents a part of the human skeleton, which of the following statements is correct? **(Exp. 2025)**



a. Part (Z) is connected anteriorly to the neural arch.
b. The part shown in the figure belongs to the pectoral girdle.
c. Part (X) passes through the vertebrae shown in the figure only.
d. Part (Y) is inclined downwards and carries two inferior articulating processes.

46) The largest articulating vertebra in the human spine is vertebra No. ..... **(Exp. 2025)**

a. 7
b. 19
c. 24
d. 25

47) The ratio between the number of vertebral bones in a newborn and their number in an adult man is ..... **(Experimental 2025)**

a. Less than one.
b. Equal to one.
c. Greater than one.
d. There is no relationship.