



BIOLOGY

BOOKS - PRADEEP BIOLOGY (HINGLISH)

LOCOMOTION AND MOVEMENTS

Ncert Exercises With Answers

1. Draw the diagram of a sarcomere of skeletal muscle showing different regions

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2. Define sliding filament theory of muscle contraction.

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3. Describe the important steps in muscle contraction.

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4. Write true or false. If false, change the statement so that it is true.

(a) Actin is present in thin filament. (b) H zone of striated muscle fibre represents both thick and thin filaments. (c) Human skeleton has 206 bones. (d) There are 11 pairs of ribs in man. (e) Sternum is present on the ventral side of the body.

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5. Write the difference between:

- (a) Actin and Myosin
- (b) Red and White muscles
- (c) Pectoral and Pelvic girdle

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6. Match the columns 1 and II. and choose the correct combination from the options given.

Column I

Column II

- | | |
|-------------------|-------------------|
| (a) Smooth muscle | (1) Myoglobin |
| (b) Tropomyosin | (2) Thin filament |
| (c) Red muscle | (3) Sutures |
| (d) Skull | (4) Involuntary |



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7. What are the different types of movements exhibited by the cells of human body?



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8. How do you distinguish between a skeletal muscle and a cardiac muscle?



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9. Name the type of the joint between the following:

- (a) atlas/axis
- (b) carpal/metacarpal of thumb
- (c) between phalanges
- (d) femur/acetabulum
- (e) between cranial bones
- (f) between pubic bones in the pelvic girdle



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10. Fill in the blank spaces :

- (a) All mammals (except few) have cervical vertebra.
- (b) The number of phalanges in each limb of human is
- (c) Thin filament of myofibril contains 2 'F' actins and two other proteins, namely, And
- (d) In a muscle fibre, Ca^{++} is stored in
- (e) and pairs of ribs are called floating ribs.
- (f) The human cranium is made of bones.



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Additional Questions Very Short Answer Questions

1. What is the role of girdles in skeleton ?

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2. Write the names of the factors which are responsible for osteoporosis.

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3. What is the contractile of a muscle fibre called?

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4. Name the two types of myofilaments in a sarcomere.

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5. Which myofilaments slide in a sarcomere during contraction ?



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6. Where are the intercalated discs found in the cardiac muscle fibres?



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7. What is the fatigue of a muscle due to ?



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8. Which compounds provide energy for muscle contraction?



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9. Name the muscle that causes peristalsis.



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10. Give one example of a sphincter muscle.



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11. What lubricates the freely movable joint at the shoulder?



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12. By which tissue are muscles attached to the bones?



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13. Name the kind of tissue that prevents the mobility of skull (cranial) bones.



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14. How many bones are found in human cranium?



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15. What is a muscle twitch?



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16. Pubic symphysis is more flexible in women than in men. Explain the statement.



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17. Name three ear ossicles.



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18. What are tibia and fibula?



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19. Name the cavity in the girdle, into which the head of the femur fits.



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20. Locomotion requires a perfect coordinated activity of muscular,
and Systems.



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21. The three tiny bones present in middle ear are called ear ossicles.
Write them in correct sequence beginning from ear drum.



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Short Answer Questions

1. Why are movement and locomotion necessary among the animals?

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2. Three systems cooperate in causing movements. Name them. Is swimming by a spermatozoan a muscular or nonmuscular movement ?

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3. Which bones surround the pelvis ? Where is the latter located?

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4. How do ilium and ileum differ?



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5. What causes muscle fatigue ? How is it removed?

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6. Humans have 3 kinds of ribs. Name these with examples.

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7. What is cyclosis ?

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8. Of what tissues is the endoskeleton formed ? Give its main parts.

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9. Which bones help in hearing ? Where are they found?

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10. Give the position and role of foramina transversaria.

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11. What is a motor unit?

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12. What kind of muscle fibres are richly found in the extensor muscles of the back? What characteristics enable these fibres to serve their purpose?

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13. What is acetabulum ?



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14. Differentiate between tendon and ligament.



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15. Differentiate between rheumatoid arthritis and osteoarthritis.



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16. What is the role of calcium ions in muscle contraction ?



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17. Fill in the blanks :

- (a) Troponin is a part of filament.
- (b) Head of has ATPase activity.
- (c) Humerus, radius and bones are found in the fore arm.
- (d) Acetabulum is present in the girdle.
- (e) Ball and socket joint is a joint.

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18. Match the columns 1 and II. and choose the correct combination from the options given.

Column I	Column II
(a) Smooth muscle	(1) Myoglobin
(b) Tropomyosin	(2) Thin filament
(c) Red muscle	(3) Sutures
(d) Skull	(4) Involuntary

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19. Consider the following four statements (i)-(iv) and select the correct option.

(i) Actin is present in thin filament.

(ii) H-zone of striated muscle fibre represents both thick and thin filaments.

(iii) There are 11 pairs of ribs in man.

(iv) Sternum is present on ventral side of the body.



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20. Match the items given in column I with appropriate items (one or more) in column II.

Column I

(i) Humerus

(ii) Hydrostatic skeleton

(iii) Femur

Column II

(a) Thigh

(b) Upper arm

(c) Flat worms

(d) Acetabulum

(e) Glenoid cavity

(f) Hydra



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21. Give the location of a ball and socket joint in a human body

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22. What is muscle ? Write the names of different types of muscles.

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23. How does the skeletal muscle contract ?

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24. What is the role of calcium ions in muscle contraction ?

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25. How are thick and thin filaments arranged in a muscle fibre ?



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26. How do the joints help in movement ? Explain.



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27. Name the kinds of non-muscular movements. Give examples of each.



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28. Explain the principle of antagonistic muscles. Give one example of such muscles.



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29. EXOSKELETON AND ENDOSKELETON SYSTEM



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30. Name the major parts of human skeleton. Give the number of bones in each part.



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31. What is the biological significance of (a) myoglobin, (b) phosphocreatine.



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32. How do the body muscles act ?



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33. Explain sliding filament theory of muscle contraction with neat sketches.



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34. What is meant by (a) threshold stimulus, (b) muscle twitch, and (c) tetanus.



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35. Write a short note on muscle fatigue.



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36. What makes the synovial joint freely movable? List the various type of synovial joints.



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37. Explain the initiation of muscle contraction. What is the role of sarcoplasmic reticulum, myosin head and F-actin during contraction in

striated muscles?

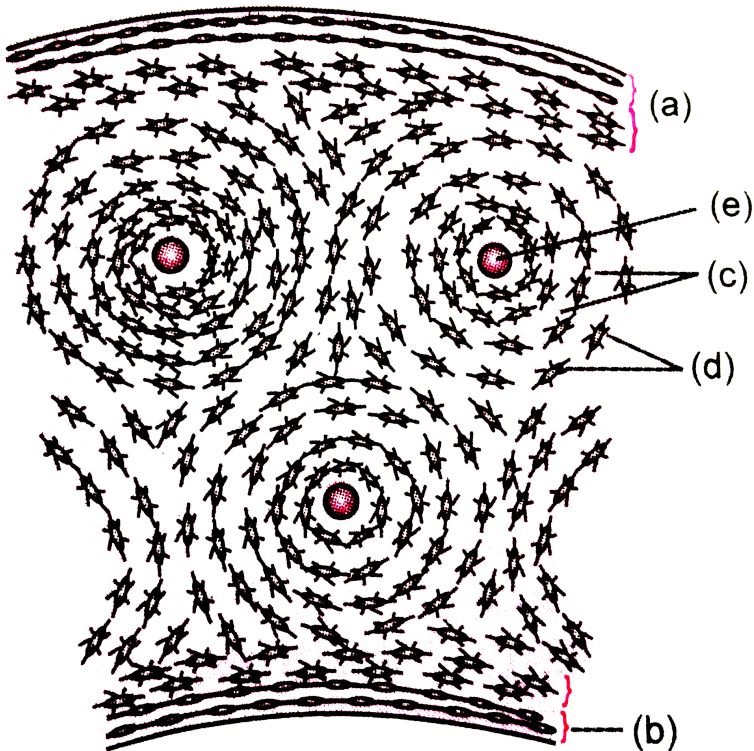


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38. Study the given figure carefully :

Answer the following questions

- (i) Label the parts mentioned as (a), (b), (c), (d) and (e) .
- (ii) Give various functions of the human endoskeleton.



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39. Fill in the blanks :

(i) Type of cartilage present in pinna and tip of the nose is called

Cartilage and type of cartilage present in intervertebral discs is called..... Cartilage.

(ii) The mineral matter present in bone is mainly..... . It gives bone its considerable ability to withstand..... .

(iii) Tendons join to whereas ligaments join to..... .

(iv) Human skeleton is divided into two main parts i.e..... and..... .

(v) Number of cervical vertebrae present in the neck of man and camel are and respectively.

(vi) There are 12 pairs of ribs which movably articulate with the thoracic vertebrae at the back and unite in front with the sternum to form

The upper pairs of ribs are attached in front directly to the sternum and are called ribs. The next..... pairs of ribs are joined to the ribs above each and are termed ribs. The remaining pairs are free in front and are called ribs.



40. Our forearm is made of three different bones. Comment.

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41. With respect to rib cage, explain the following

(a) bicephalic ribs (b) true ribs

(c) floating ribs

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42. Write a few lines about gout.

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43. What are the points for articulation of pelvic and pectoral girdles?

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Long Answer Questions

1. Elucidate the types of movements found among the animals.

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2. Write the difference between

(a) Actin and Myosin (b) Red and White muscles (c) Movable and Immoveable joints.

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3. What is a joint ? Write its type with examples.

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4. What is arthritis ? How is it caused?



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5. Discuss the functions of skeleton.



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6. Give a summary of the electrical and biochemical events that occur in muscle contraction.



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7. How is energy supplied for muscle contraction ?



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8. Answer the following briefly :

(a) How does the muscle shorten during its contraction and lengthen during its relaxation ? (b) What biological functions are served by the skeletal system ? (c) What type of muscles will be antagonistic to pronators and abductors respectively, and why ? (d) Why a red muscle fibre can work for a prolonged period while a white muscle fibre suffers from fatigue after a shorter work? (e) Where from the muscle gets energy for its contraction ?



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9. Write briefly the biological importance of the following : (a) Myoglobin , (b) Actin and myosin myofilaments , (c) Synovial joints, (d) Fibrous joints , (e) Lactic acid.



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10. Distinguish between : (a) Pronator and supinator. (b) Muscle twitch and tetanus. (c) Ball - and - socket joint and hinge joint. (d) Abductor and adductor. (e) Tendon and ligament.



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11. How do you account for 206 bones in the human skeleton ?



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12. Write the basic functions of human skeleton.



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13. Give scientific reasons of the following statements :

(i) Atlas vertebra is also called 'yes bone'. (ii) Female pelvis is larger and has a broader front than male pelvis. (iii) Osteoarthritis is more

common in old people. (iv) Hydra lacks muscle tissue still it shows a variety of movement. (v) Human vertebral column shows 4 distinct curves.

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14. How does a muscle shorten during its contraction and return to its original form during relaxation ?

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15. Discuss the role of Ca^{2+} ions in muscle contractions. Draw neat sketches to illustrate your answer.

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16. Differentiate between pectoral and pelvic girdle.

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1. What is osteoporosis ? In which sex is it more prevalent ?

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2. Why is osteoarthritis commonly called 'wear-and -tear' disease ? In which age is it common ?

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3. Name the disease which occurs especially in men and is an inherited disorder of purine metabolism.

How does it develop?

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4. Which joints are termed 'sutures' ? Where are they found in the body ?



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5. (i) Why does your mother insist you to have a glass of milk daily ?

(ii) Mention atleast two diseases which are associated with skeletal system.



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6. Organisms like earthworms and leeches have no skeleton to anchor the ends of muscles. Still, they show movements. How ?



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7. What type of motion do the following muscles cause ?

(i) Flexors and Extensors (ii) Pronators and Supinators.



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8. Why do relaxed skeletal muscles remain in partial contraction as long as their nerves are intact?

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9. In which situation, muscles are in oxygen debt ? How do they come out of it ?

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10. What is the shortcoming of exoskeleton in insects ?

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11. What makes the synovial joint freely movable ? List any two of synovial joints.

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12. (a) How many total bones are there in human body ? Name the largest and the smallest bone in our body.

(b) What are replacing and sesamoid bones? Give examples.



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13. (a) What do you mean by ear ossicles ? Which bones have become modified to form them ?

(b) How many vertebrae are there in general in cervical (neck) region in mammals?



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14. What is rigor mortis ?

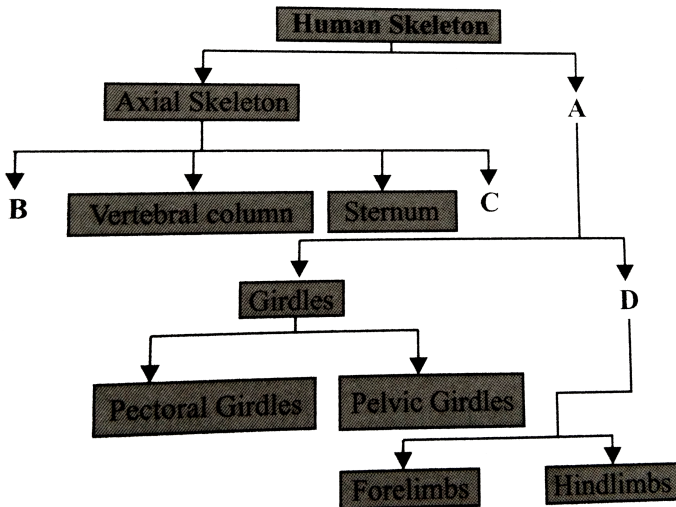


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15. Why does fatigue occur after vigorous exercise and how it disappears ?

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16. Study the following flowchart and fill up the blanks by selecting the correct option.



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17. What is the advantage of having fewer bones in human skull ?



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18. Why is osteoarthritis common in old people ?

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19. Give the location of the following in the human body :

(i) 'No' bone (ii) Ball and socket joint

(iii) Humerus bone (iv) Femur bone

(v) Glenoid cavity (vi) Acetabulum

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20. What is the significance of the formation of four curves, one each located in the neck, thorax, abdomen and pelvis region, of vertebral column of human beings?

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1. ATPase enzyme needed for muscle contraction is located in

" " Or

The contractile protein of skeletal muscle involving ATPase activity is

- A. Myosin
- B. Actin
- C. Actinin
- D. Troponin

Answer: A



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2. Which of the following pairs is correctly matched ?

- A. hinge joint-between vertebrae

B. gliding joint - between zygapophyses of the successive vertebrae

C. cartilaginous joint-skull bones

D. fibrous joint-between phalanges

Answer: B



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3. exoskeleton is absent in

A. scoliodon

B. frog

C. rabbit

D. fowl

Answer: B



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4. Which one is required for muscle contraction and nerve impulse transmission ?

A. Ca^{+2} ions

B. Ca^{++} and Mg^{++} ions

C. Mg^{++} ions

D. Fe^{2+} ions

Answer: B



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5. Inter-articulated disc is found in

A. muscles of arms

B. vertebrae

C. muscles of legs

D. pubic symphysis

Answer: B



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6. During strenuous exercise glucose is converted into

- A. glycogen
- B. pyruvic acid
- C. starch
- D. lactic acid

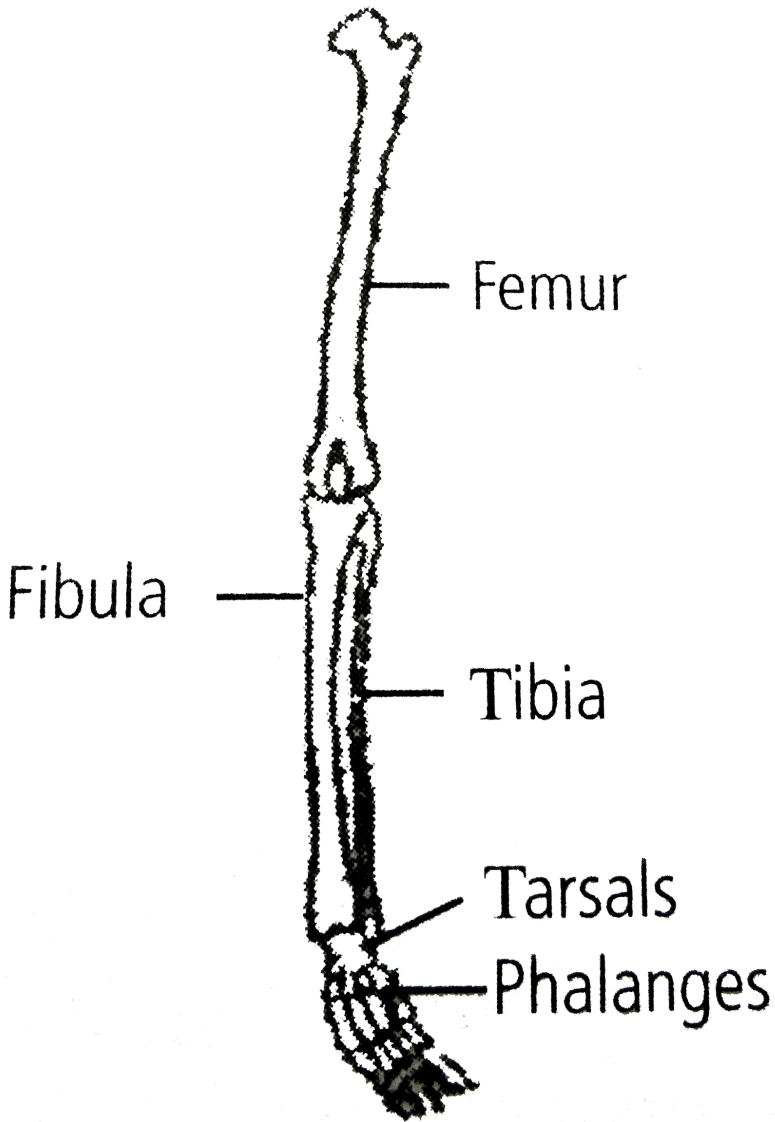
Answer: D



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7. Given diagram shows bone of the left human hindlimb as seen from front. It has certain mistakes in labelling.

Which of the following pairs contain both wrongly labelled bones ?



A. tibia and tarsals

B. femur and fibula

C. fibula and phalanges

D. tarsals and femur

Answer: C



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8. ATPase enzyme needed for muscle contraction is located in

" " Or

The contractile protein of skeletal muscle involving ATPase activity is

A. troponin

B. tropomyosin

C. myosin

D. α – actinin

Answer: C



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9. A cricket player is fast chasing ball in the field. Which one of the following group of bones is directly contributing in this movement ?

- A. femur, malleus, fibia, metatarsals
- B. pelvis, ulna, patella, tarsals
- C. sternum, femur, fibia, fibula
- D. tarsals , femur, metatarsals, fibia

Answer: D



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10. Which one is anatomically correct

- A. Collar bones : 3 Pairs
- B. Salivary glands : 1 Pair
- C. Cranial nerves : 10 Pairs

D. Floating ribs : 2 Pairs

Answer: D



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11. In frog, the vertebra with an anterior convex surface is

A. atlas

B. urostyle

C. 8th vertebra

D. 9th vertebra

Answer: D



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12. Obturator foramen is found in :

- A. frog's pelvic girdle
- B. frog's pectoral girdle
- C. rabbit's pelvic girdle
- D. rabbit's pectoral girdle

Answer: C

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13. Acoelus vertebrae in frog is

- A. 5th vertebrae
- B. atlas vertebrae
- C. 8th vertebrae
- D. none of these

Answer: B

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14. Collogen is a

- A. Phosphoprotein
- B. Globulin
- C. Derived protein
- D. Scleroprotein

Answer: D



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15. Upon stimulation of skeletal muscles, calcium is immediately made available for binding to troponin from

- A. blood
- B. lymph
- C. sarcoplasmic reticulum

D. bone

Answer: C



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16. This facial bone is unpaired

A. Lacrimal

B. Palatine

C. Nasal

D. Vomer

Answer: D



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17. The longest bone of the human body is

A. humerus

B. tibia

C. vertebra

D. femur

Answer: D



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18. Krause membrane or Z- line is a myofibril which separates two adjacent

A. sarcomere

B. sarcosome

C. fascia

D. Anisotropic band

Answer: A

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19. Which one of the following is wrongly matched

- A. Myosin - contractile protein
- B. Tendon- connective tissue
- C. Smooth muscle - involuntary muscle
- D. Troponin - fibrous protein

Answer: D

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20. Skeletal muscles are controlled by

- A. Sympathetic nerves
- B. Parasympathetic nerves
- C. Somatic nerves

D. Autonomic nerves

Answer: C



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21. Centrum of 8th vertebra of frog is

A. Procoelous

B. acoelous

C. Amphicoelous

D. Amphiphatyan

Answer: C



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22. In the matrix lies the bone cells, called

Or

Cells that maintain marrow cells are called

- A. osteocytes
- B. chondrocytes
- C. osteoclasts
- D. none of these

Answer: A



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23. Dark band are

- A. A-band
- B. B-band
- C. I-band

D. Z-line

Answer: A



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24. Protein which plays a significant role in ageing is

A. elastin

B. collagen

C. actin

D. myosin

Answer: B



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25. Which cartilage is present at the end of long bones?

A. calcified

B. hyaline

C. elastic

D. fibrous

Answer: B



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26. Cytoskeleton is made up of

A. Proteinaceous filaments

B. Calcium carbonate granules

C. Callose deposits

D. Cellulosic microfibrils

Answer: A



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27. The kind of tissue that forms the supportive structure in our pinna (external sears) is also found in

A. tip of nose

B. vertebrae

C. nails

D. ear ossicles

Answer: A



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28. Which one of the following is correct pairing of a body part and the kind of muscle tissue that moves it

A. Iris - Involuntary smooth muscle

B. Heart wall - Involuntary unstriated muscle

C. Biceps of upper arm - Smooth muscle fibres

D. Abdominal wall - Smooth muscle

Answer: A



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29. Elbow joint is an example of

A. ball and socket joint

B. pivot joint

C. hinge joint

D. gliding joint

Answer: C



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30. Match the following and mark the correct option

Column I

Column II

Fast muscle fibres *i.* Myoglobin

Slow muscle fibres *ii.* Lactic acid

Actin filament *iii.* Contractile unit

Sarcomere *iv.* I-band

A. A-(i), B-(ii), C-(iv), D-(iii)

B. A-(ii), B-(i), C-(iii), D-(iv)

C. A-(ii), B-(i), C-(iv), D-(iii)

D. A-(iii), B-(ii), C-(iv), D-(i)

Answer: C



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31. Ribs are attached to

A. Scapula

B. Sternum

C. Clavicle

D. Ilium

Answer: B



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32. What is the type of movable joint present between the atlas and axis?

A. Pivot

B. Saddle

C. Hinge

D. Gliding

Answer: A



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33. ATPase of the type muscle is located in

- A. Actinin
- B. Troponin
- C. Myosin
- D. Actin

Answer: B



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34. Intervertebral disc is found in the vertebral column of

- A. Birds
- B. Reptiles
- C. Mammals
- D. Amphibians

Answer: C

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35. Which one of the following is showing the correct sequential order of vertebrae in the vertebral column of human beings ?

- A. Cervical - lumbar - thoracic - sacral - coccygeal
- B. Cervical - thoracic - sacral - lumbar - coccygeal
- C. Cervical - sacral - thoracic - lumbar - coccygeal
- D. Cervical - thoracic - lumbar - sacral - coccygeal

Answer: D

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36. Which one of the following options is incorrect ?

- A. Hinge joint - between humerus and pectoral girdle
- B. Pivot joint - between atlas, axis and occipital condyle
- C. Gliding joint - between the carpals
- D. Saddle joint - between carpel and metacarpals of thumb

Answer: A

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37. Knee joint and elbow joints are examles of

- A. Saddle joint
- B. Ball and socket joint
- C. Pivot joint
- D. Hinge joint

Answer: D

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38. Macrophages and leucocytes exhibit

- A. Ciliary movement
- B. Flagellar movement
- C. Amoeboid movement
- D. Gliding movement

Answer: C



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39. Which one of the following is not a disorder of bone ?

- A. Arthritis
- B. Osteoporosis
- C. Rickets

D. Artherosclerosis

Answer: D



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40. Which one of the following statement is incorrect

A. Heart muscles are striated and involuntary

B. The muscles of hands and legs are striated and voluntary

C. The muscles located in the inner walls of alimentary canal are striated and involuntary

D. Muscles located in the reproductive tracts are unstriated and involuntary

Answer: C



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41. Which one of the following statements is true :

- A. Head of humerus bone articulates with acetabulum of pectoral girdle.
- B. Head of humerus bone articulates with glenoid cavity of pectoral girdle.
- C. Head of humerus bone articulates with a cavity called acetabulum of pelvic girdle.
- D. Head of humerus bone articulates with a glenoid cavity of pelvic girdle.

Answer: B



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42. Muscles with characteristic striations and involuntary are

A. Muscles in the wall of alimentary canal

B. Muscles of the heart

C. Muscles assisting locomotion

D. Muscles of the eyelids

Answer: B



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43. Match the followings and mark the correct option

Column I

Column II

Sternum

i. Synovial fluid

Glenoid Cavity

ii. Vertebrae

Freely movable joint

iii. Pectoral girdle

Cartilagenous joint

iv. Flat bones

A. A-(ii), B-(i), C-(iii), D-(iv)

B. A-(iv), B-(iii), C-(i), D-(ii)

C. A-(ii), B-(i), C-(iv), D-(iii)

D. A-(iv), B-(i), C-(ii), D-(iv)

Answer: B



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44. Low Ca^{+} in the body fluid may be the cause of

A. gout

B. tetany

C. anaemia

D. angina pectoris

Answer: B



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45. Which one of the following is the correct description of a certain part of a normal human skeleton

C.

Structures

Description

Shoulder joint and elbow joint – Ball and socket type of joint

D.

Structures

Description

Premolars and molars – 20 in all and 3-rooted

Answer: B



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47. Pectoral girdle constitute

A. scapula and clavicle

B. radius and ulna

C. ilium and ischium

D. maxilla and mandible

Answer: A



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48. In a resting muscle fibre, tropomyosin partially covers

- A. Ca binding sites on troponin
- B. actin binding sites on myosin
- C. myosin binding sites on actin
- D. Ca binding sites on actin

Answer: C



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49. In human beings the cranium is formed by

- A. eight bones of which two are paired
- B. fourteen bones of which six are paired
- C. ten bones of which two are paired
- D. twelve bones of which four are paired

Answer: A



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50. The example of pivot joint is

- A. hip joints
- B. metacarpophalangeal joints
- C. ankle joints
- D. radioulnar joints

Answer: D



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51. The major function of the intervertebral discs is to

- A. absorb shock

B. string the vertebrae together

C. prevent injuries

D. prevent hyperextension

Answer: A



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52. Three of the following pairs of the human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the non-matching pair

- | | | |
|----|---|-----------------------------------|
| A. | Pair of skeletal parts
sternum and ribs | Category
axial skeleton |
| B. | Pair of skeletal parts
clavicle and glenoid cavity | Category
pelvic girdle |
| C. | Pair of skeletal parts
humerus and ulna | Category
appendicular skeleton |
| D. | Pair of skeletal parts
malleus and stapes | Category
ear ossicles |

Answer: B



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53. The important muscles proteins that help in movement are

- A. actin and myosin
- B. tropomyosin
- C. troponin
- D. all of these

Answer: D



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54. Select the correct statement about disorder of muscular or skeletal system

- A. Muscular dystrophy-age related shortening of muscles

- B. Osteoporosis-decrease in bone mass and higher chance of fractures with advancing age
- C. Myasthenia gravis - Auto immune disorder which inhibits sliding of myosin filaments
- D. Gout inflammation of joints due to extra deposition of calcium

Answer: B



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55. Which one of the following pairs of chemical substance, is correctly categorized ?

- A. Calcitonin and thyroxine-thyroid hormones
- B. Pepsin and prolactin-two digestive enzymes secreted in stomach
- C. Troponin and myosin -complex proteins in striated muscles
- D. Secretin and rhodopsin - polypeptide hormones

Answer: C



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56. The characteristics and an example of a symbol joint in humans is

Characterstics	Example
(a) Lymph filled between two bones, limited movement	Gliding joint
(b) Fluid cartilage between two bones, limited movements	Knee joint
(c) Fluid filled between two joints, provides cushion	Skull bones
(d) Fluid filled synovial cavity between two bones	Joint between

A. Characteristics	Examples
Fluid filled between two joints, provides cushion	Skull bones

B.

Characteristics	Examples
Fluid filled synovial cavity between two bones	Joint between atlas

C.

Characteristics	Examples
Lymph filled between two bones, limited movement	Gliding joint

D.

Characteristics	Examples
Fluid cartilage between two bones, limited movements	Knee joint

Answer: B



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57. Select the correct statement with respect to locomotion in humans

- A. Accumulation of uric acid crystals in joints causes their inflammation.
- B. The vertebral column has 10 thoracic vertebrae.
- C. The joint between adjacent vertebrae is a fibrous joint.
- D. A decreased level of progesterone causes osteoporosis in old people.

Answer: A



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58. The H-zone in the skeletal muscle fibre is due to

- A. the central gap between myosin filaments in the A-band.

- B. the central gap between actin filaments extending through myosin filaments in the A-portion of the A-band .
- C. extension of myosin filaments in the central portion of the A-band .
- D. the absence of myofibrils in the central portion of A-band.

Answer: B

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59. Select the correct matching of the type of the joint with the example in human skeletal system

- | | | |
|----|---------------------|---|
| A. | Type of joint | Example |
| | Cartilaginous joint | between frontal and parietal |
| B. | Type of joint | Example |
| | Pivot joint | between third and fourth cervical vertebrae |
| C. | Type of joint | Example |
| | Hinge joint | between humerus and pectoral girdle |
| D. | Type of joint | Example |
| | Gliding joint | between carpals |

Answer: D

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60. Stimulation of muscle fibre by a motor neuron occurs at

- A. the neuromuscular junction
- B. the transverse tubules
- C. the myofibril
- D. the sacroplasmic reticulum

Answer: A

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61. Which of the following is common among mammals ?

- A. They do not moult
- B. They are carnivores
- C. They are carnivores

D. They have ventral nerve cord

Answer: B



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62. Which of the following is not a function of the skeletal system

A. Locomotion

B. Storage of minerals

C. Storage of minerals

D. Production of body heat

Answer: D



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63. Which of the following joints would allow no movement

A. Ball and Socket joint

B. Fibrous joint

C. Cartilaginous joint

D. Synovial joint

Answer: B

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64. In old age stiffness of joints is due to the

A. hardening of bones

B. inefficiency of muscles

C. decrease in synovial fluid

D. enlargement of bones

Answer: C

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65. Lack of relaxation between successive stimuli in striated muscle contraction is known as

- A. Fatigue
- B. Tetanus
- C. Tonus
- D. Spasm

Answer: B



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66. Name the ion responsible for masking active sites for myosin for cross-bridge activity during muscle contraction

- A. Calcium
- B. Magnesium

C. Sodium

D. Potassium

Answer: A



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67. Osteoporosis, an age related disease of skeletal system, may occur due to

A. immune disorder affecting neuromuscular junction leading to fatigue

B. high concentration of Ca^{++} and Na^{+}

C. decreased level of estrogen

D. accumulation of uric acid leading to inflammation of joints

Answer: C



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68. The pivot joint between atlas and axis is a type of

- A. cartilaginous joint
- B. synovial joint
- C. saddle joint
- D. fibrous joint

Answer: B



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69. Out of 'X' pairs of ribs in humans only 'Y' pairs are true ribs. Select the option that correctly represents values of X and Y and provides their explanation

A.

X = 12, Y = 5

True ribs are attached dorsally to vertebral column

B.

X=24, Y=2

The true ribs are dorsally attached to vertebral column

C.

X=12, Y=7

True ribs are dorsally attached to vertebral column

D.

X = 12, Y=7

True ribs are attached dorsally to vertebral column

Answer: D



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70. Calcium is important in skeletal muscle contraction because it

A. binds to troponin to remove the masking of active sites on actin for

myosin

B. activates the myosin ATPase binding to it

C. detaches the myosin head from the actin filament

D. prevents the formation of bonds between the myosin cross bridges and the actin filament.

Answer: A



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Practice Questions II Assertion Reason Type Questions

1. Assertion. Skull is dicondylic in man.

Reason. A pair of occipital condyles located anterolateral to foramen magnum movably articulate with the atlas vertebra.

- A. If both A and R are true and R is the correct explanation of A .
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: A



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2. Assertion. On receiving action potential via T-tubules, the sarcoplasmic reticulum releases Ca^{++} into the sarcoplasm.

Reason. Ca^{++} uncover the active site of actin myofibril, allowing a myosin head to join this site.

- A. If both A and R are true and R is the correct explanation of A .
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: B



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3. Assertion. Hydra is capable of a variety of movements.

Reason. Hydra has antagonistic longitudinal and circular muscle fibres.

- A. If both A and R are true and R is the correct explanation of A .
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: C



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4. Assertion. The extensor muscles of the human back remain in sustained contraction to maintain erect posture against gravity.

Reason. The extensor muscles are rich in red muscle fibres with abundant mitochondria and myoglobin.

- A. If both A and R are true and R is the correct explanation of A .

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: A



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5. Assertion. A motor unit is a group of motor neurons in CNS.

Reason. A motor unit inhibits movement.

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

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

Answer: D



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6. Assertion. Female's pelvis is larger and has a wider bottom opening.

Reason. Female has more subcutaneous fat.

- A. If both A and R are true and R is the correct explanation of A .
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: B



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7. Assertion. Inflammation of a skeletal joint may immobilize the movements of the joint.

Reason. Uric acid crystals in the joint cavity and ossification of articular cartilage lead to this.

- A. If both A and R are true and R is the correct explanation of A .
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: A

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8. Assertion. Rigor mortis is the state of body stiffening prior to death.
Reason. It is due to relaxation of actin and myosin filaments.

- A. If both A and R are true and R is the correct explanation of A .
- B. If both A and R are true but R is not the correct explanation of A.
- C. If A is true but R is false.
- D. If both A and R are false.

Answer: D

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Notable Questions

1. What enables a clam to keep its shell closed for a long time?

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2. Are actin and myosin proteins confined to muscle cells?

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