



BIOLOGY

BOOKS - MODERN PUBLISHERS BIOLOGY (HINGLISH)

LOCOMOTION AND MOVEMENT

Practice Problems

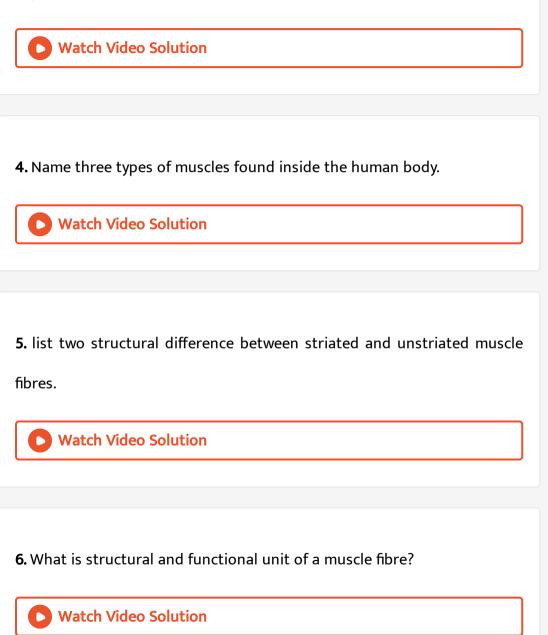
1. Name two muscles of human body which are ectodermal in origin.

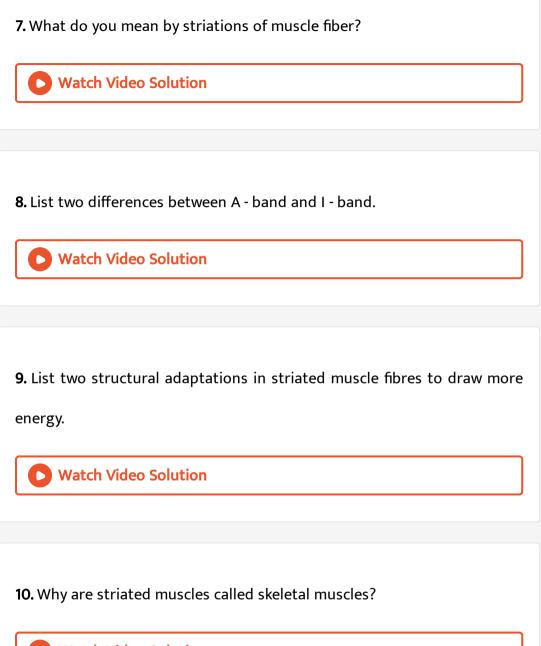
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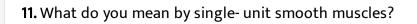
2. What are myofibrils?

3. Why do the muscle cells and nerve cells not have power of growth and

regeneration?

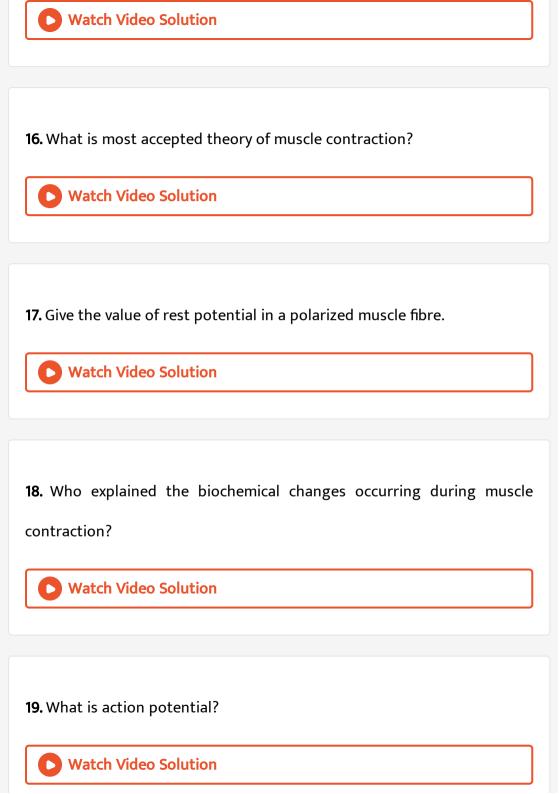




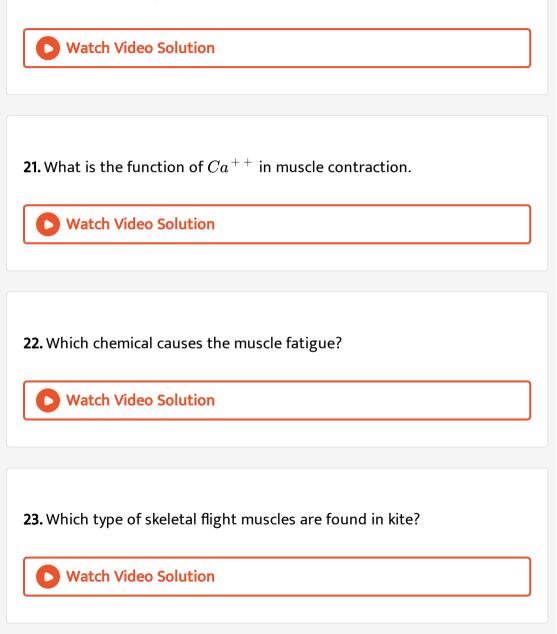


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12. List two structural peculiarities of cardiac muscle fibres.
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13. What is Z- line? Give its function.
Watch Video Solution
14. What is sarcoplasmic reticulum? What is its function?
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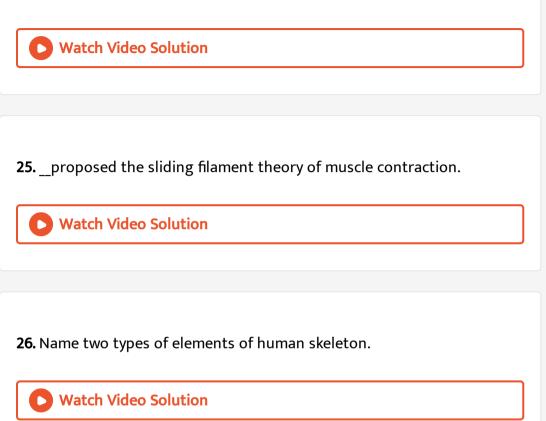
15. Why we shiver during winter months?



20. Name two energy sources for muscle contraction.



24. What is myoglobin?



27. What are the number of bones in axial and appendicular skeleton of

man?

28. Which part of human skeleton forms the helmet for the protection of

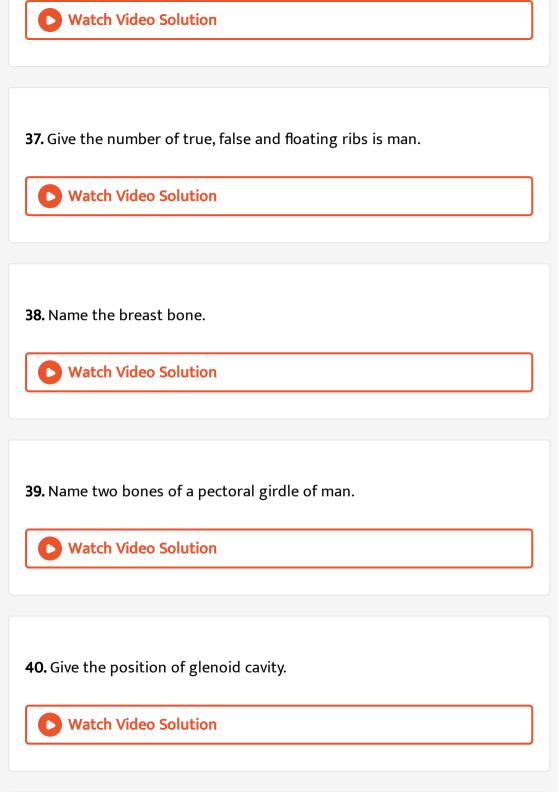
human brain?

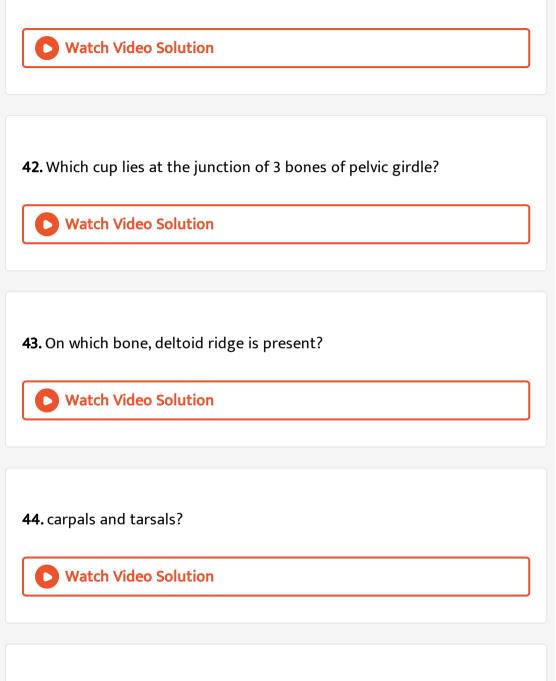
Watch Video Solution 29. Through which aperture, brain is continuous with spinal cord? Watch Video Solution **30.** Which types of jaw suspension is found in man? Watch Video Solution **31.** Name the tongue bone. Watch Video Solution

32. Give the vertebral formula of man?

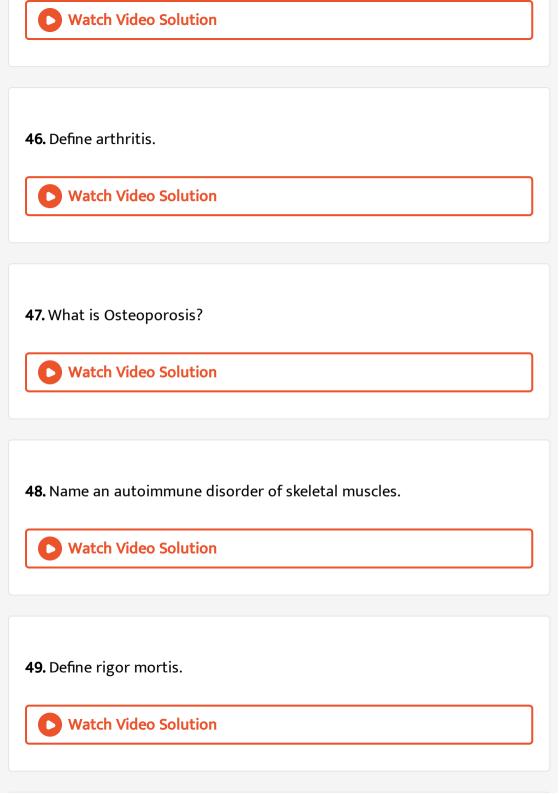
Watch Video Solution
33. Which vertebra has the odontoid process ?
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34. What is the function of odontoid process?
Watch Video Solution
35. Name a vestigial bony part of human skeleton.
Watch Video Solution

36. Give the function of intervertebral discs.

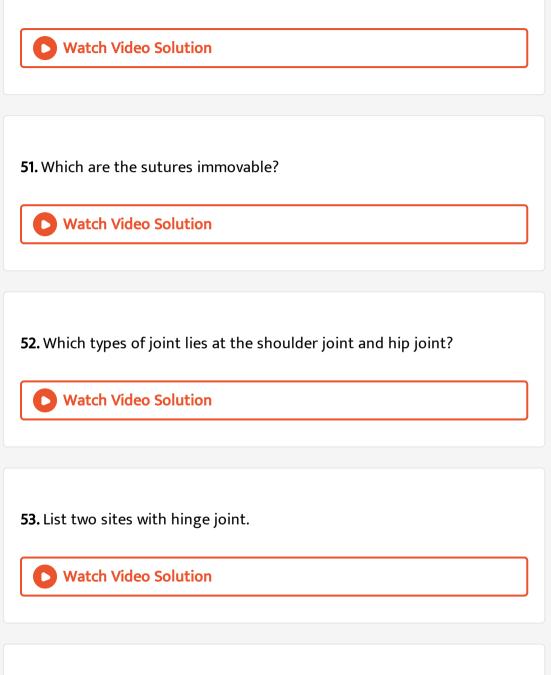




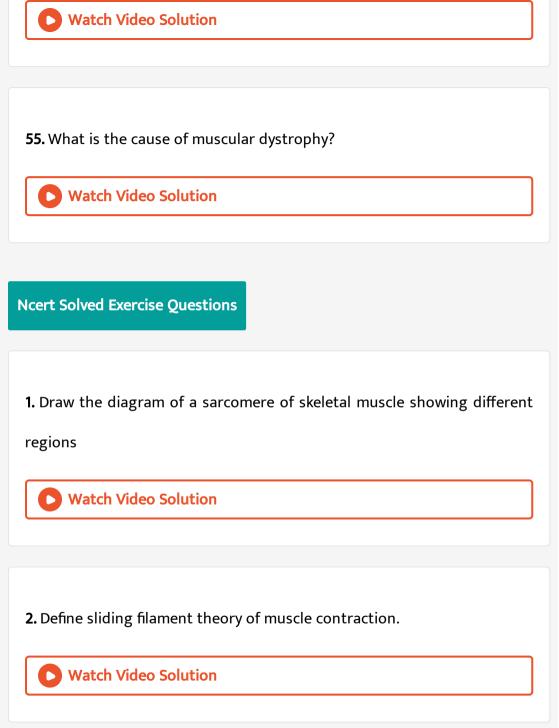
45. What is patella?



50. What is the function of pubic symphysis?



54. TETANY



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.

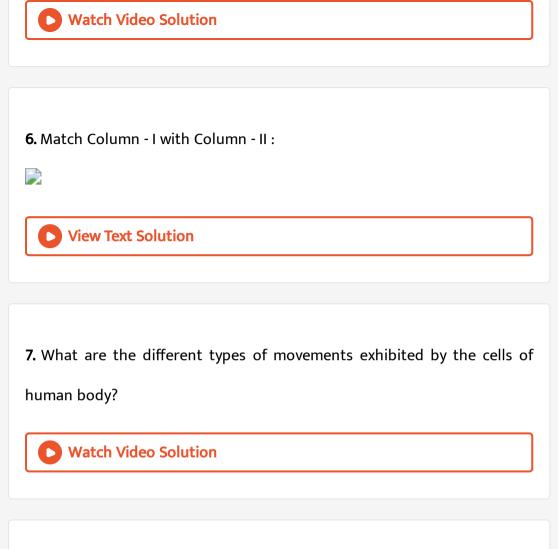
(d) There are 11 pairs of ribs in man.

(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



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

muscle?

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

- (a) atlas/axis
- (b) carpal/metacarpal of thumb
- (c) between phalanges
- (d) femuar/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.

Ncert Solved Exemplar Problems A Multiple Choice Questions

1. Ribs are attached to

A. Scapula

B. Sternum

C. Clavicle

D. Ilium

Answer: B

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2. 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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3. ATPase of the type muscle is located in

A. Actinin

B. Troponin

C. Myosin

D. Actin

Answer: C

4. Intervertbral disc is found in the vertebral column of

A. Birds

B. Reptiles

C. Mammals

D. Amphibians

Answer: C

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5. 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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6. 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 carpals and metacarpals of thumb

Answer: A

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7. 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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8. Macrophages and leucocytes exhibit

A. Ciliary movement

B. Flagellar movement

C. Amoeboid movement

D. Gliding movement

Answer: C

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

A. Arthritis

B. Osteoporosis

C. Rickets

D. Atherosclerosis

Answer: D

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10. 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 inner walls of alimentary canal are striated

and involuntary

D. Muscles located in inner walls of alimentary canal are smooth and

involuntary

Answer: C

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11. Which one of the following statement is true?

A. Head of humerus bone articulates with acetabulum of pectoral girdle.

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

Answer: B



12. Muscles with characteristic striations and involuntary are

A. Muscles in the wall alimentary canal

B. Muscles of the heart

C. Muscles assisting locomotion

D. muscles of the eyelids

Answer: B

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Ncert Solved Exemplar Problems B Very Short Answer Type Questions

1. Name the cells / tissues in the human body, which

(i) Exhibit amoeboid movement (ii) Exhibit ciliary movement

	Watch Video	Solution					
2.	Locomotion	requires	а	perfect	coordinated	activity	of
mu	scularsyste	ems.					
	Watch Video	Solution					

3. Sarcolemma, sarcoplasm and sarcoplasmic reticulum refer to particular

type of cell in our body. Which is this cell and to what parts of that cell do

these names refer to ?



4. Label the difference components of actin filament in the diagram given

below:



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5. 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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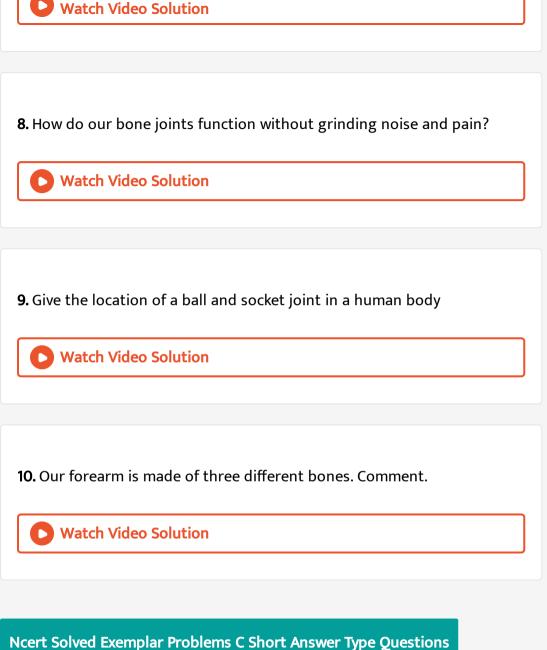
6. What is difference between the matrix of bones and cartilage?



7. Which tissue is afflicted by myasthenia gravis? What is the underlying

cause.





1. With respect to rib cage, explain the following
(a)bicephalic ribs (b) true ribs
(c)floating ribs
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2. In old age, people often suffer from stiff and inflamed joints. What is
this condition called? What are the possible reasons for these symptoms?

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3. Exchange of calcium between bone and extracellular fluid takes place under the influence of certain hormones

(a) What will happen if more of Ca^{2+} is in extracellular fluid?

(b) What will happen if very less amount of Ca^{2+} is in the extracellular

fluid?

4. Name atleast two hormones which result in fluctuation of Ca^{2+} level.



5. Rahul exercies regularly by visiting a gymnasium. Of late he is gaining weight. What could be the reason? Choose the correct answer and elaborate.

- A. Rahul has gained weight due to accumulation of fates in the body.
- B. Rahul has gained weight due to increased muscle and less of fat.
- C. Rahul has gained weight because his muscle shape has changed .
- D. Rhaul has gained weight because of accumulation of waterin the

body.

Answer: b

6. Radha was running on a treadmill at a great speed for 15 minutes continuously. She stopped the treadmill and abruptly came out. For the next few minutes, she was breathing heavily/fast. Answer the following questions.

(a) What happened to her muscles when she did strenuouly exercised?

(b) How did her breathing rate change?

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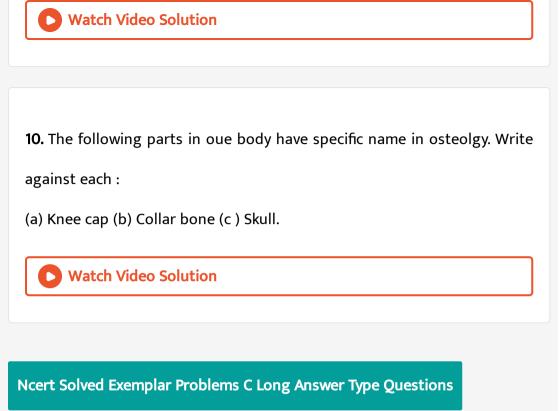
7. Write a few lines about gout.

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8. What is the source of energy for muscle contraction?

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



1. Calcium ion concentration in blood affects muscle contraction. Does it lead to tetany in certain cases? How will you correlate fluctuation in blood calcium with tetany?



2. An elderly woman slipped in the bathroom and had severe pain in her lower back. After X-ray examination doctors told her it is due to a slipped disc. What dose that mean?



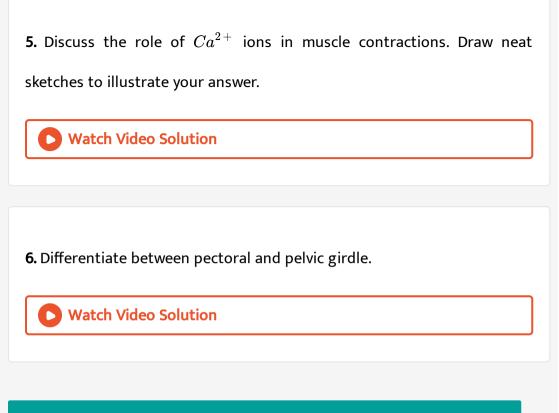
3. Explain sliding filament theory of muscle contraction with neat sketches.

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4. How does a muscle shorten during its contraction and return to its

original form during relaxation ?





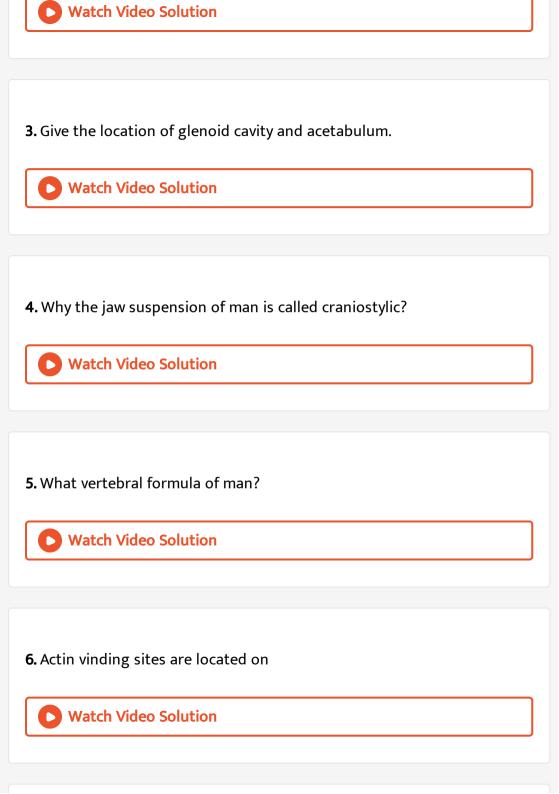
Higher Order Thinking Skills Brain Twisting Very Short Answer Questions

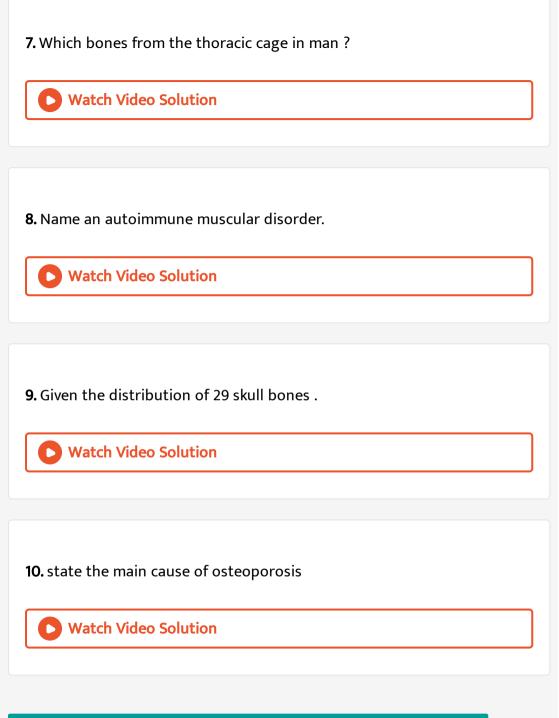
1. Name the proteins present in A- band and I- band.



2. which chemical causes depolarisation of sarcolemma at neuromuscular

junction?





Higher Order Thinking Skills Brain Twisting Short Answer Questions

1. Why the white skeletal muscles undergo earline fatigue than the red

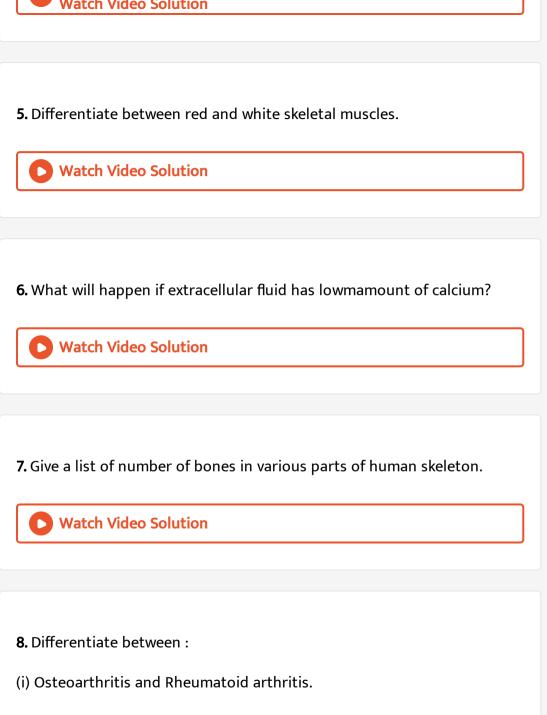
skeletal muscles?

Watch Video Solution 2. Repolarization of mucles fibre is not immediately followed by next depolarization. Why? Watch Video Solution 3. Give the reason for that after menopause, human female generally suffers from osteoporosis. Watch Video Solution

4. Supra scapula is very large sized in frog and toad but is absent from

human skeleton. Justify the statement.





(ii) Suture and symphysis.

9. Define the following:

(i) Single muscle twitch (ii) muscle fatigue (iii) Motor unit.

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Higher Order Thinking Skills Brain Twisting Long Answer Questions

1. Briefly describe the biochemical changes that occur in muscle contraction.

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2. Differentiate between:

(i) True ribs, false ribs and floating ribs.

(ii) Pectoral girdle and pelvic girdle.

Quick Memory Test A Say True Or False

1. Write "True" or "False".

Sarcomere is covering of striated muscle fibre.

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2. Write "True" or "False".

Red muscles are slow acting while white muscles are fast acting.

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3. Write "True" or "False".

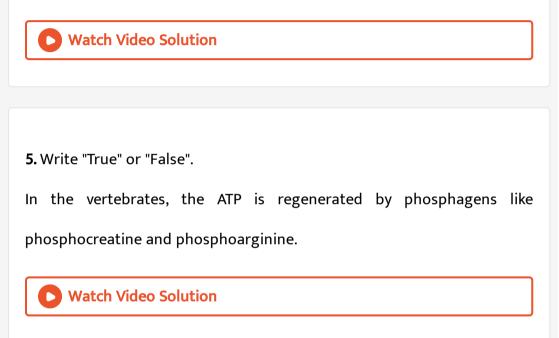
Glenoid cavity is present in pelvic girdle while acetabulum is present in

pectoral girdle.

4. Write "True" or "False".

Bone forming cells are called osteoclasts while bone dissolving cells are

called osteoblasts.



6. Write "True" or "False".

Bones of wrist are tarsals while bone of ankle are carpals.

7. Write "True" or "False".

Man has dicondylic jaw suspension.

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8. Write "True" or "False".

Astragalus and calcaneum bones are found in fore limb of frog.

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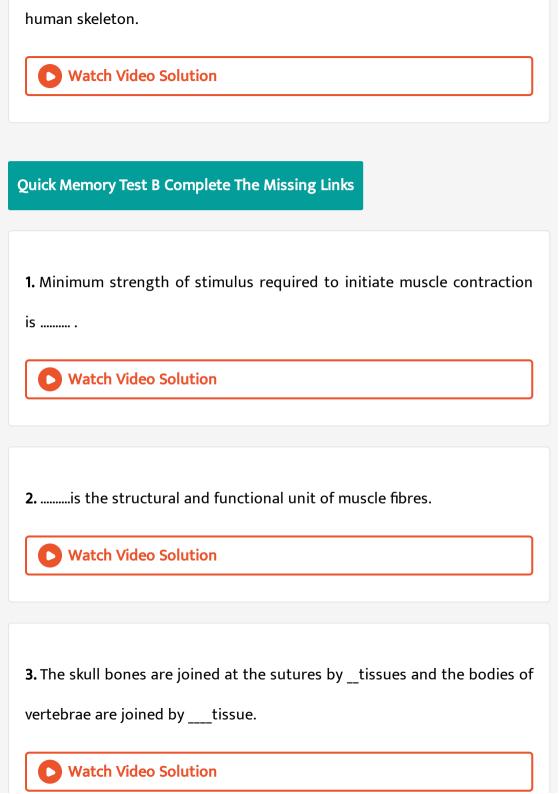
9. Write "True" or "False".

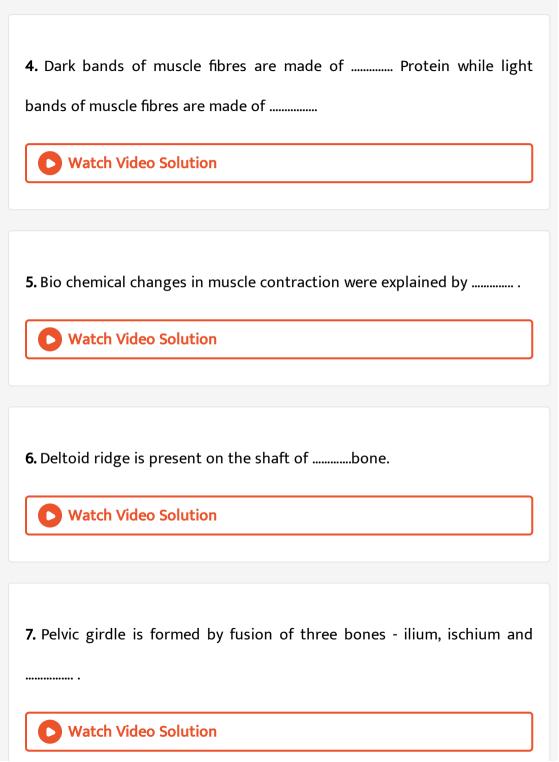
Obturator foramen is found in pelvic girdle.



10. Write "True" or "False".

Stapes is smallest bone of human skeleton while Tibia is longest bone of





8. Depressed activity of osteblasts lead to disease called

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9. is cup-like depression in pelvic girdle.
Vatch Video Solution
10. bones are present in wrist of hand whilebones are present

in ankle of foot.

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11.muscle fibres are involved in rapid contraction for short duration

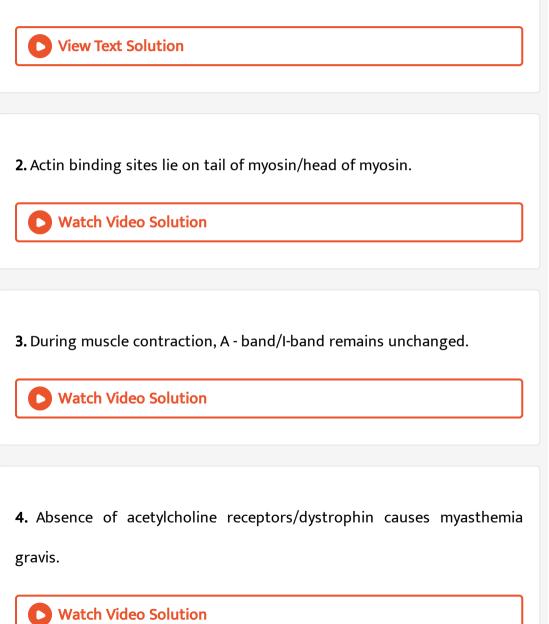
whilein slow contraction for long period.

12. Joint of femur with pelvic girdle is Joint.

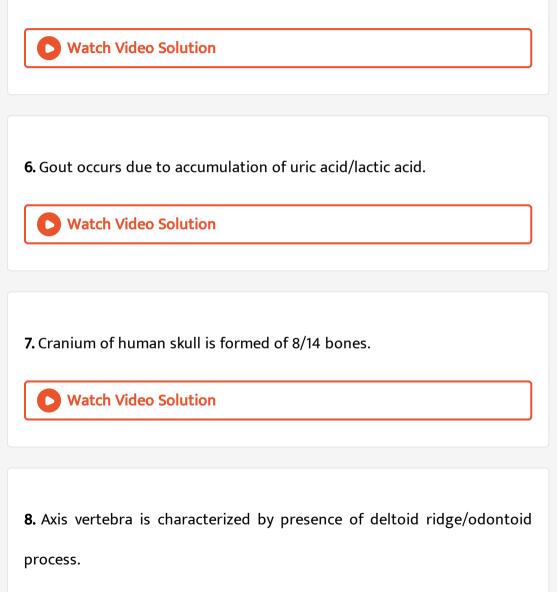
Watch Video Solution	
13is an example of hinge joint. Watch Video Solution	
14. Humerus, radius and Bones are found in the forearm. Watch Video Solution	
15. Acetabulum is present in the Girdle. Watch Video Solution	

Quick Memory Test C Choose The Correct Alternative

1.	Movements	of	body	parts	and	location	in	organisms	are
inc	luced/autono	mic.							



5. Muscle relaxation involves release/trapping of calcium ion by sarcoplasmic reticulum.



9.	Acetabul	um lies	; in	pelvic	girdle	/pectoral	girdle.
	/ icclubul	annines	,	perme	5" """,	peccolui	5" "

Vatch Video Solution
10. Patella bone is a cartilaginous bone/sesamoid bone.
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Revision Exercises Very Short Answer Questions
1. Name two types of filaments in a sarcomere.
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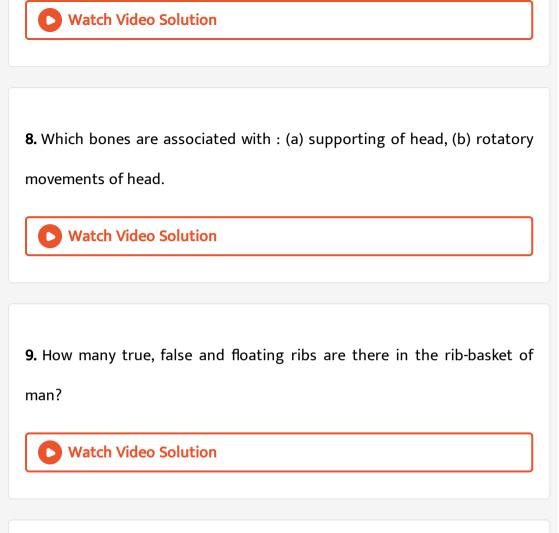
2. Give an example of slightly movable joint.

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3. Gi	ve the	smallest	and	longest	bone	of human	skeleton.
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4. Give the location of foramen magnum and neural canal.
Watch Video Solution
5. Give the location of carpals and tarsals.
O Watch Video Solution
6. Name three bones forming the pelvic girdle.
Watch Video Solution

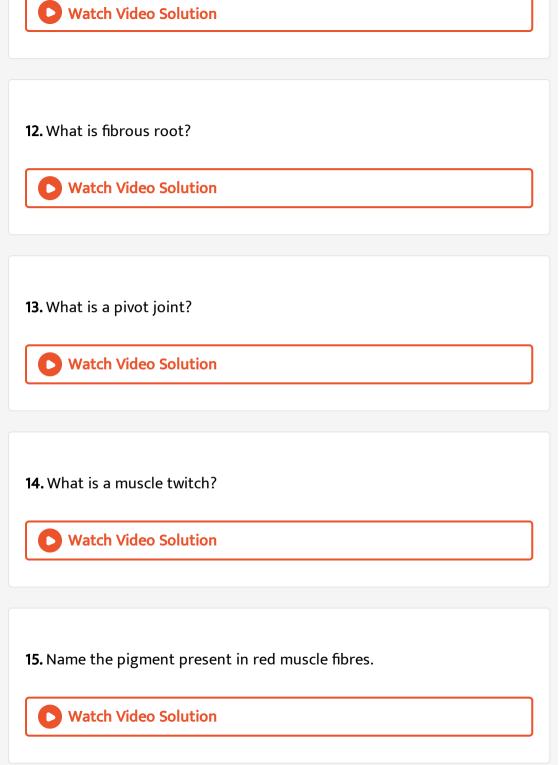
7. Where are deltoid ridge and odontoid process located ?



10. Name a sesamoid bone. Give its position.

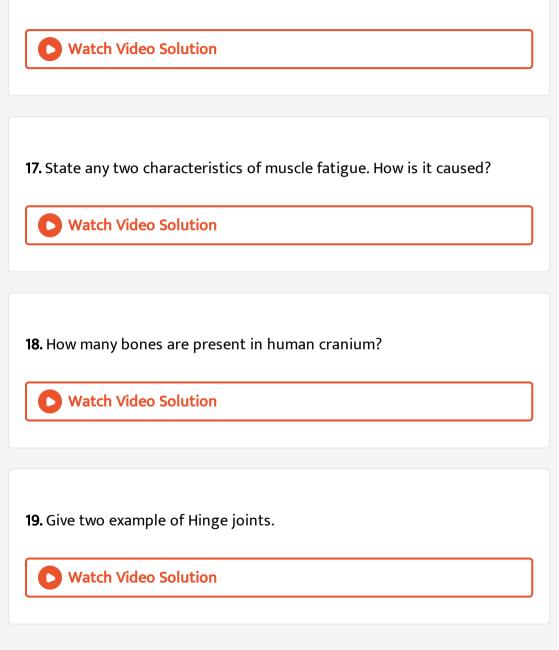
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11. Name the kind of joint which permits movements in a single plane.



16. Name the type of filaments which contitute A-bands (dark bands) of

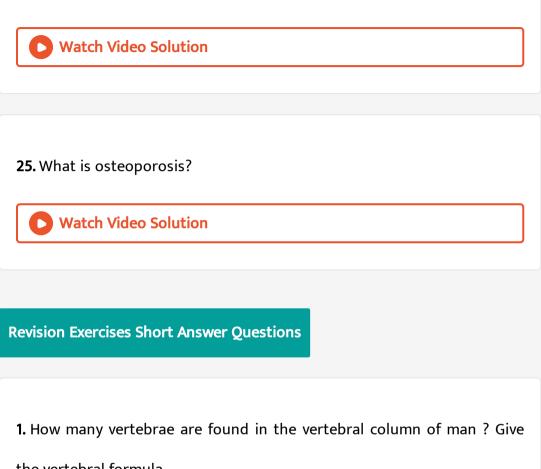
striated muscle fibres.



20. Name the cavit	y in the girdle,	into which the	e head of the	femur fits.
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21. Mention the role of ligaments in human body.
Watch Video Solution
22. What is total numbers of bones present in the left pectoral girdle and
left arm respectively in a normal human?
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23. What causes Gouty arthritis ? Watch Video Solution

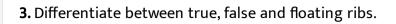
24. What is rheumatoid arthritis ?



the vertebral formula.



2. Differentiate fibrous joint and cartilaginous joint.



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4. Osteoarthritis and Rheumatoid arthritis.
Watch Video Solution
5. What is arthritis ? How is it caused?
Watch Video Solution
6. What are synovial joints? Explain.
Watch Video Solution

7. What is a pivot joint? Explain with an example.

• Watch Video Solution 8. Why a red muscle fibre can work for a prolonged period while a white

muscle fibre suffers from a fatigue after a short period?

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9. List any four functions of Skeletal System.

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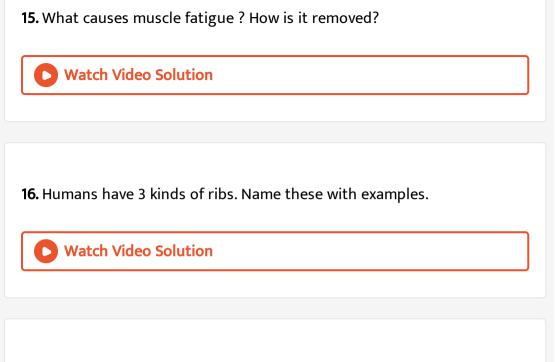
10. What makes the synovial joint freely movable? List the various type of

synovial joints.

11. What is synovial joint? With the help of one example for each, point

out the difference between a ball and socket joint, and a pivot joint.

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12. Differentiate between muscle twitch and tetanus.
Watch Video Solution
13. What is the role of calcium ions in muscle contraction ?
Watch Video Solution
14. What makes the synovial joint freely movable ? List any two of synovial
joints.
Watch Video Solution



17. Give two difference between rheumatoid arthritis and gouty arthritis

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18. What is osteoporosis? Name two factors responsible for this condition.

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



20. 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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21. Which neurotransmitter causes depolarization of muscle fibre? What is the role of calcium in muscle contraction ? Why is there need of a refractory period?

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



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



24. 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?



25. What is synovial joint? With the help of one example for each, point

out the difference between a ball and socket joint, and a pivot joint.

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26. Give a summary of the electrical and biochemical events that occur in
muscle contraction.
Watch Video Solution
27. Why are movement and locomotion necessary among the animals?
Vatch Video Solution
28. Define sliding filament theory of muscle contraction.

29. 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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30. Name the category of bones forming the rib cage. How are these articulated to each other to form the cage ?

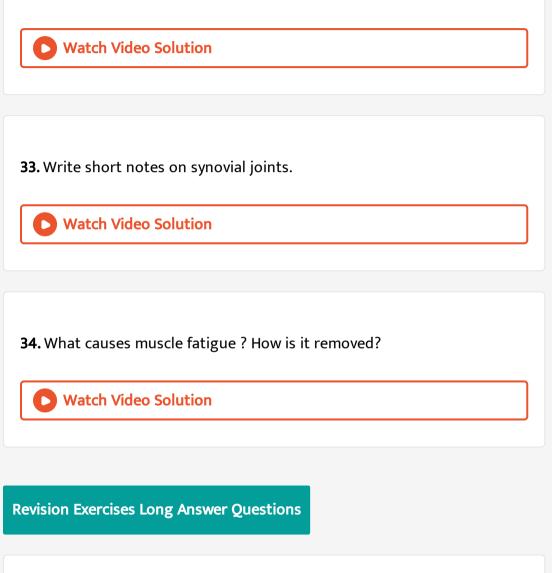
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31. What is the role of calcium ions , troponin and F-actin during

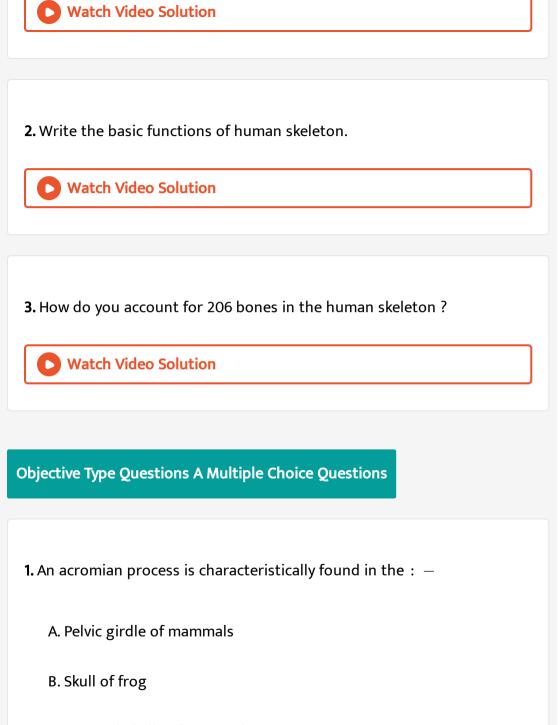
contraction of straited muscles of humans?

32. Explain giving one example of each, the three types of joints in human

skeleton, based on the capacity of movement.



1. Briefly describe the biochemical changes that occur in muscle contraction.



C. Pectoral girdle of mammals

D. Sperm of mammals

Answer: C



2. Which of the following pairs, is correctly matched ?

A. Cartilaginous joint - skull bones

B. Hinge joint - between vertabrae

C. Fibrous joint - between phalanges

D. Gliding joint - between zygapophyses

Answer: D



3. Some vertebrae in birds fuse to form:

A. Sacrum

B. Synsacrum

С. Соссух

D. None of these

Answer: B

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4. Knee joint is

A. Synovial joint

B. Cartilaginous joint

C. Hyaline joint

D. Fibrous joint

Answer: A

5. In a muscle undergoes rapid contraction and relaxation, the sarcoplasmic reticulum extension

A. Reguires constant plugging in and out of calcium

B. Rapid synthesis of myosin

C. Do not require energy

D. All of these

Answer: A

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6. The muscle fatigue is due to :

A. Na^+

 $\mathsf{B.}\,K^{\,+}$

C. Lactic acid

D. Citric acid

Answer: C



7. Lumbar vertebrae in human skeloton are:

A. 5

- B. 7
- C. 9

D. 12

Answer: A



8. Lactic acid deposition leads to

A. Spasm

B. Convulsion

C. Muscle fatigue

D. Tetany

Answer: C

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9. Muscles which bend the joint is

A. Flexor

B. Twitch

C. Extensor

D. Involution

Answer: A

10. Muscle band that remains unchanged during contraction and relaxation of skeletal muscle is

A. I B. H C. A

D. Z - line

Answer: C

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11. The contractile protein of skeletal muscle involving ATPase activity is

A. Tropomyosin

B. Myosin

C. α -Actinin

D. Troponin

Answer: B



12. 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, tibia , metatarsals

B. Pelvis, ulna, patella, tarsals

C. Sternum, femur, tibia, fibula

D. Tarsals, femur, metatarsals, tibia

Answer: D

13. Largest muscle in the human body is

A. Sartorius

B. Gluteus

C. Stapedius

D. Masseter

Answer: B

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14. Articulation of femur with pelvic girdle is an example of:

A. Gliding joint

B. Ball and socket joint

C. Hinge joint

D. Pivot joint

Answer: B



15. Lower jaw of man is formed of :

A. One bone

B. Two bones

C. No bone, only muscles

D. Three bones

Answer: A

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16. Functional unit of muscle is :

A. Fasciculi

B. Muscle fibre

C. Bundle

D. Both (a) and (c)

Answer: A

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17. The number of vertebrae present in cervical, thoracic, lumber, sacral

and coccyx regions respectively are

A. 12,7,5,1,1

B. 1,7,5,12,1

C. 7,5,1,12,1

D. 7,12,5,1,1

Answer: D

18. In human body, which one of the following is anatomically correct?

A. Carnial nerves, 10 pairs

B. Floating ribs : 2 pairs

C. Collar bones : 3 pairs

D. Salivary glands : 1 pair

Answer: B

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19. Which one of the following is a skull bone?

A. Coracoid

B. Arytenoid

C. Atlas

D. Pterygoid

Answer: D Watch Video Solution 20. ATPase enzyme needed for muscle contraction is located in A. Actinin B. Troponin C. Myosin D. Actin Answer: C Watch Video Solution

21. The first digit of forearm is called:

A. Pollex

B. Hallux

C. Index

D. None of these

Answer: A

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22. Spongy or cancellous bones are:

(1) Skull bones (2) Vertebrae (3) Femur (4) Ribs

A. 1,2 and 3 are correct

B.1 and 2 are correct

C. 2 and 4 are correct

D.1 and 3 are correct

Answer: B

23. Glenoid cavity is found in:

A. Pelvic gridle

B. Pectoral girdle

C. Sternum

D. Humerus

Answer: B

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24. Bones becomes fragile in

A. Osteoporosis

B. Gout

C. Arthritis

D. None of these

Answer: A Watch Video Solution 25. An acromian process is characteristically found in the : – A. Pelvic girdle of mammals B. Skull of frog C. Pectoral girdle of mammals D. Sperm of mammals Answer: C Watch Video Solution

26. Which of the following pairs, is correctly matched ?

A. Cartilaginous joint - skull bones

B. Hinge joint - between vertabrae

C. Fibrous joint - between phalanges

D. Gliding joint - between zygapophyses

Answer: D

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27. Synsacrum of fowl is consist of about

A. 29 vertebrae

B. 3 vertebrae

C. 16 vertebrae

D. single vertebra

Answer: C

28. A sesamoid bone is

A. Palatine

B. Pterygoid

C. Patella

D. Presphenoid

Answer: C

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29. Globular protein molecule which masks the active sites on F-actin is:

A. Troponin

B. Tropomyosin

C. Myosin

D. Light meromyosin

Answer: B

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30. Find out the correct order of number of bones in the parts of skull such as cranial bone, facial bone, hyoid bone and middle ear bone respectively

A. 14,8,1 and 3

B. 3, 8, 14 and 1

C. 14,8,3 and 1

D. 8, 14, 1 and 3

Answer: D

31. Statements

A-bands of the muscle are dark and contain myosin I-band are the light bands and contain action During muscle contration the A-band contracts The part between the two Z-lines is called as saromere The central part of thin filament, not over-lapped by thick filament is called H-zone of the above statements.

A. A, B and C are correct while D and E are incorrect

B. A, C and E are correct while B and D are incorrect

C. A and B are correct while C,D and E are incorrect

D. A, B and D are correct while C and E are incorrect

Answer: D



32. Consider the following statements.

I. In man, vetebral column has 33 bones which are organised as 28 bones.

II. Pelvic girdle is made up of two fused bones only.

III. Osteporosis is characterised by microarchitectural deteriortion of the

bone.

IDentify the correc statment.

A. A alone is correct

B. B alone is correct

C. C along is correct

D. A alone is incorrect

Answer: C



33. Acoelus vertebrae in frog is

A. 5th vertebra

B. Atlas vertebra

C. 8th vertebra

D. None of these

Answer: D

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34. Number of bones in skull is

A. 26

B. 28

C. 107

D. 29

Answer: D

35. Hinge joint is present between

A. Femur and ulna

B. Humerus and ulna

C. Femur and pectoral girdle

D. Femur and pelvic girdle

Answer: B

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36. Select a sesamoid bone:

A. Patella

B. Femur

C. Ulna

D. Pterygoid

Answer: A



37. Accumulation of which of following in muscle causes fatigue?

A. Acetic acid

B. Carboxylic acid

C. Hydrochloric acid

D. Lactic acid

Answer: D



38. What connects muscle to bone ?

A. Ligament

B. Cartilage

C. Tendon

D. Sarcomere

Answer: C

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39. The basic unit of vertebrate kidney is the

A. Cell

B. Nephron

C. Neuron

D. Ommatidium

Answer: B

40. Which one of the following items gives its correct total number

A. Types of diabetes - 3

B. Cervical vertebrae in human - 8

C. Floating ribs in humans - 4

D. Amino acid found in proteins - 16

Answer: C

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41. During strenous exercise glucose is converted into

A. Glycogen

B. Pyruvic acid

C. Strach

D. Lactic acid

Answer: D



42. Which of the following is essential for muscle contraction?

A. Ca^{2+}

B. Mg^{2+}

C. Both (a) and (b)

D. Fe^{2+}

Answer: C

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43. Number of bones in skull is

A. 26

B. 28

C. 107

D. 29

Answer: D

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44. In the thin filament of skeletal muscle fibre, a small globular protein,

that masks the active sites on the F-actin is

A. G-actin

B. Actin

C. Tropomyosin

D. Troponin

Answer: D

45. Number of cervical vertabrae in mammals are:

A. 7	
B. 8	
C. 12	
D. 6	

Answer: A

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46. Joint between atlas and axis is :

A. Ball and Socket joint

B. Pivot joint

C. Saddle joint

D. Angular joint

Answer: B



47. Elbow joint is an example of

A. Pivot joint

B. Hinge joint

C. Gliding joint

D. Ball and Socket joint

Answer: B



48. Which one of the following is the correct matching of three items and

their grouping category ?

A.	Items	Grc	oup
	Malleus, incus and cochlea	Pyr	imidines
B.	Items	Grou	р
	Ilium, ischium and pubis	Musc	$le \ proteins$
C.	Items	(Group
	Actin, myosin and rhodops	sin (Coxal bones of pelvic girdle
D.	Items		Group
	Cytosine, Uracil and Thair	mine	Ear ossicle

Answer: B

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49. Pick out the correct match :

A. Sternum = 14 bones

B. Pelvis = 3 bones

C. Ribs = 20 bones

D. Face = 5 bones

Answer: B Watch Video Solution 50. Which cartliage is present at the joints of long bones? A. Calcified B. Elastic C. Hyaline D. Fibrous Answer: C Watch Video Solution

51. Innominate is

A. A nerve

B. A vein

C. An artery

D. A part of skeleton and an artery

Answer: D

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52. Thoracic cage in rabbit is made up of

A. Ribs , vertebral column and diaphragm

B. Ribs, diaphragm and sternum

C. Vertebral column, diaphragm and sternum

D. Ribs, vertebral column and sternum

Answer: D

53. Centrum of 8th vertebra of frog is

A. Procoelous

B. Acoelous

C. Amphicoelous

D. Amphiplatyan

Answer: C

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54. Axis vertebra is identified by

A. Sigmoid notch

B. Deltoid ridge

C. Odontoid process

D. Centrum

Answer: C

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

A. Perietal bone and temporal bone of the skull are joined by fibrous

joint

- B. First vertebra is axis which articulates with the occipital condyles
- C. The 9th and 10th pairs of ribs are called floating ribs.
- D. Glenoid cavity is a depression to which the thigh bone articulates

Answer: A

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56. Pectoral girdle constitute

A. Scapula and clavicle

B. Radius and ulna

C. Ilium and ischium

D. Maxilla and mandible

Answer: A

Watch Video Solution

57. End plate junction is present between

A. Neuron and striated muscle

B. Neuron and neuron

C. Muscle and muscle

D. Both (a) and (c)

Answer: A



58. Acetabulum is present in

A. Pelvic girdle of rabbit

B. Pectoral girdle of rabbit

C. Both (a) and (b)

D. None of these

Answer: A

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59. Opening in the skull of rabbit is:

A. Foramen of Monro

B. Coronal suture

C. Foramen magnum

D. Lambdoidal suture

Answer: C

Watch Video Solution

60. The membrane areas between the cranial bones of the foetal skull are

called

A. Areolas

B. Foramina

C. Sutures

D. Fontanella

Answer: D

61. The example of pivot joint is

A. Hip joints

- B. Metacarpophalangeal joints
- C. Ankle joint
- D. Radio ulnar joint

Answer: D

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62. The major function of the intervertebral discs is to

A. Absorb shock

- B. String the vertebrae together
- C. Prevent injuries
- D. Prevent hyper extension

Answer: A

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- 63. Read the statements regarding muscle proteins
- (A) Actin is a thin filament and is made up of two F-actins
- (B) The complex protein, tropomyosin is distributed at regular intervals

on the troponin

- (C) Myosin is a thick filament which is also a polymerized protein
- (D) The globular head of mermyosin consists of light meromyosin (LMM)

Of the above statements

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

Answer: C



64. Which ribs have "buckle-handle" type of movements?

A. Rib no. 1 - 2

B. Rib no. 3 - 5

C. Rib no. 6 - 10

D. Rib no. 11 - 12

Answer: C

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65. In the resting muscle fibre, tropomysin partially covers

A. Ca-binding sites of troponin

B. Actin-binding sites on myosin

C. Myosin -binding sites on actin

D. Ca-binding sities on actin

Answer: C



66. 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



67. Actin vinding sites are located on

A. Troponin

B. Tropomyosin

C. Meromyosin

D. Both tropomyosin and meromyosin

Answer: C

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68. The scapula is a large triangular flat bone situated in the dorsal part

of the thorax between

A. The second and fifth ribs

B. The second and seventh ribs

C. The third and sixth ribs

D. The third and eighth ribs

Answer: B



69. The coxal of the pelvic girdle is formed by the fusion of

A. Ilium, ischium and pubis

B. Scapula and clavicle

C. Ilium and scapula

D. Ilium, scapula and ischium

Answer: A

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70. Which of the statements about the mechanism of muscle contraction

are corrcet

(I) Acetylcholine is released when the neural signal raches the motor end

plate

(II) Muscle contration is initiated by a singnal sent by CNS via a sensory

neuron

(III) During muscle contration, isotropic band gets elongated

(IV) Repeated activation of the muscles can be lead to lactic acid eccumulation

A. A and D are correct

B. A and C are correct

C. B and C are correct

D. A, B and C are correct

Answer: A

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71. Select the correct statement regarding the specific disorder of musclular or skeletal system.

A. Muscular dystrophy - Age related shorting of muscles

B. Osteoporosis - Decrease in bone mass and higher chance of

fractures with age

C. Myasthenia gravis - Autoimmune disorder which inhibits sliding of

myosin filaments

D. Gout - Inflammation of joint due to extra deposition of calcium.

Answer: B

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72. During muscular contraction, which of the following events occur?

- H-zone disappears
- (ii) A-band widens
- (iii) I-band reduces in width
- (iv) Width of A-is unaffected
- (v) M-line and Z-lne come closer
- (v) M-line and Z-line come closer

A. (i), (iii), (iv) and (v)

B. (i) , (ii) and (v)

C. (ii) , (iv) and (v)

D. (i), (ii) and (iii)

Answer: A

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73. Symphysis contains

A. Hyaline cartilage

B. Fibrous cartilage

C. Calcified cartilage

D. None of these

Answer: B



74. Gout is caued due to accumulation of :

A. Oxalic acid

B. Uric acid

C. Calcium carbonate

D. Lactic acid

Answer: B

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75. Human vertebra is

A. Amphicoelous

B. Acoelous

C. Procoelous

D. Heterocoelous

Answer: B



76. Human vertabral column is formed of 33 vertebrae andbones

A. 33

:

B. 26

C. 27

D. 29

Answer: C

77. 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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78. Choose the correct option regarding a normal human

- A. The skull is dicondylic
- B. Metacarpals are five in numbers
- C. Patella is a cup-shpaed bone covering the knee dorsally
- D. Scapula is a large triangular flat bone, situated on the ventral side of

the thorax

- A. A and E along are wrong
- B. A and B along are wrong
- C. B and E alone are wrong
- D. C and D along are wrong

Answer: D

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79. Decreased levels of extrogen is a common cause of

A. Myasthenia gravis

B. Tetany

C. Osteoporosis

D. Gout

Answer: C



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

A. A decreased level of progesterone cause osteoporosis in old people

B. Accumulation of uric acid crystals in joints causes their

inflammation

C. Vertebral column has 10 thoracic vertebrae

D. Joint between adjacent vertebrae is a fibrous joint

Answer: B

81. The characteristics and an example of a synovial joint in human is

Characteristics	Examples
 (a) lymph filled between two bones, limited movement 	gliding joint between carpals
(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 atlas and axis

A.

CharacteristicsExamplesFluid cartilage between two bones, limited movementsKnee jointB.CharacteristicsExamplesFluid filled between two joints, provides cushionSkull bones

C.

CharacteristicsExamplesFluid filled synovial cavity between two bonesJoint between axis as

D.

CharacteristicsExamplesLymph-filled between two bones, limited movementsGliding joints

Answer: C



82. Stimulation of a muscle fibre by a motar neuron occurs at

A. the myofibril

B. the sarcoplasmic reticulum

C. the neuromuscular junction

D. the transverse tubules

Answer: C

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83. Select the correct matching of the type of the joint with the example

in human skeletal system

~	Type of Joint	Example
	$\operatorname{Hinge}\operatorname{joint}$	Between humerus and pectoral girdle
Β.	Type of Joint	Example
	Gliding joint	Between carpals

C. Type of Joint Example
 Cartilaginous joint Between frontal and parietal
 D. Type of Joint Example
 Pivot joint Between third and fourth cervical vertebrae

Answer: B

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84. Sliding filament theory can be best explained as

A. When myofilaments slide pas each other, Actin filaments shorten

while myosin filaments do not shorten.

- B. Actin and Myosin filaments shorten and slide pass each other.
- C. Actin and Myosin filaments donot shorten but rather slide pass each other.
- D. When myofilaments slide pass each other, Myosin filament shorten

while Actin filaments do not shorten.

Answer: C



- 85. Glenoid cavity articulates
 - A. Clavicle with acromion
 - B. Scapula with acromion
 - C. Clavide with scapula
 - D. Humerus with scapula

Answer: C



86. Which of the following joints would allow no movement

A. Fibrous joint

- B. Cartilagenous joint
- C. Synovial joint

D. Ball & socket joint

Answer: A



87. Which of the following is not a function of the skeletal system?

A. Production of eryhrocytes

B. Storage of minerals

C. Production of heat

D. Locomotion

Answer: C



88. Depositon ofin the joints causes gout:

A. Urea

B. Uric acid

C. Guanine

D. Ammonia

Answer: B

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89. Gliding joint is present between

A. Carpals

B. Humerus and pectroal girdle

C. Knee

D. Atlas and axis

Answer: A



90. Lumber region of the vertebral column in man is made up of:

A. 1 Fused vertebra

B. 7 Vertebrae

C. 12 Vertebrae

D. 5 Vertebrae

Answer: D

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91. Name the ion responsible for unmasking of acitve sites for myosin for

crossbridge activity during muscle contraction:

A. Potassium

B. Calcium

C. Magnesium

D. Sodium

Answer: B



92. Osteoporosis, an age related disease of skeletal system, may occue due to

A. Accumulation of uric acid leading to inflammation of joints

B. Immune disorder affecting neuromuscular junction leading to

fatigue

C. High concentration of calcium and sodium

D. Decreased level of estrogens

Answer: D

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

A. Tonus

B. Spasm

C. Fatigue

D. Tetanus

Answer: D

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

A. Fibrous joint

B. Cartilaginous joint

C. Synovial joint

D. Saddle joint

Answer: C

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95. 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 = 7 : True ribs are attached dorsally to vertebral column ventrally to sternum.
- B. X = 12, Y = 5 : True ribs are attached dorsally to vertebral column

sternum on two ends

C. X = 24, Y = 7 : True ribs are dorsally attached to vertebral column

sternum on two ends.

D. X = 24, Y = 12 : True ribs are doraslly attached to vertebral column

but are free on ventral side.

Answer: A



96. Which of the following hormones can play a significant role in osteoporesis

A. Estrogen and parathyroid hormone

B. Progesterone and Aldosterone

C. Aldosterone and Prolactin

D. Parathyroid hormone and prolactin

Answer: A



97. Calcium is important in skeletal muscle contraction because it

- A. Detaches the myosin head from the actin filament
- B. Activates the myosin ATPase by binding to it.
- C. Binds to troponin to remove the masking of active sites on actin for myosin.
- D. Prevents the formation of bonds between the myosin cros bridges

and the actin filament.

Answer: C

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Objective Type Questions B Cbse Pmt Main Examination Questions

1. Answer the question according to instruction:

Knee joint : Name of lubricating fluid, name of two bones, type of joint.

2. Differentiate between human and bird on the basis of number of

condyles.

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3. The given figure is of elbow joint. Answer the question given below the figure :

- (a) Give the names of parts 1,2,3 and 4 in the above figure.
- (b) Give functions of 2 and 3.
- (c) Besides connective tissue, which other tissue is present in the figure

and write its function and how does it work?

(d) Name one other such joint found in our body and give the name of

structure analogous to part (1) in the above figure.

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4. Correct the following statements by changing only the underlined words:

Skull, Ribs, Scapula and Vertebral column form axial skeleton.

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5. 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.	Pairs of skeletal parts	Category	
	Humerus and ulna	Appendicular skeleton	
B.	Pairs of skeletal parts	Category	
	Malleus and stapes	Ear ossicles	
c	Pairs of skeletal parts Sternum and Ribs	Category	
C.	Sternum and Ribs	Axial skeleton	
D.	Pairs of skeletal parts		Category
	Clavicle and Glenoid cavity		Pelvic girdle

Answer: D

1. Assertion : Human vertebrae are called amphiplatyan type.

Reason : Centrum of vertebrae is flat on both side.

- A. If both Assertion and Reason are true and Reason is correct explanation of Assertion.
- B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

- C. If Assertion is true but Reason is false
- D. If both Asssertion and Reason are false.

Answer: A



2. Assertion : Osteoarthritis is also called wear and tear disease .

Reason : In osteoarthritis , there is inflammation and degeneration of

cartilages at the joints.

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

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

C. If Assertion is true but Reason is false

D. If both Asssertion and Reason are false.

Answer: A

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3. Assertion : Osteoporosis is characterized by increase in density of

bones.

Reason : There is increased activity of the osteoblasts.

A. If both Assertion and Reason are true and Reason is correct

explanation of Assertion.

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

- C. If Assertion is true but Reason is false
- D. If both Asssertion and Reason are false.

Answer: D

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4. Assertion : Intervertebral discs are tough and strong than the pinna of man.

Reason : Intervertebral discs are formed of fibro cartilages while pinna is with calcified cartilage.

A. If both Assertion and Reason are true and Reason is correct

explanation of Assertion.

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

C. If Assertion is true but Reason is false

D. If both Asssertion and Reason are false.

Answer: C

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5. Assertion : Birds are with pneumatic bones.

Reason : Air sacs make the bones lighter which helps in the flight of the birds.

A. If both Assertion and Reason are true and Reason is correct

explanation of Assertion.

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

C. If Assertion is true but Reason is false

D. If both Asssertion and Reason are false.

Answer: A



6. Assertion : In muscle contraction, length of both A-bands and I-bands decrease.

Reason : Both myosin of A-band and actin of I-bands are contractile proteins and decrease in size during muscle contraction.

- A. If both Assertion and Reason are true and Reason is correct explanation of Assertion.
- B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

C. If Assertion is true but Reason is false

D. If both Asssertion and Reason are false.

Answer: D

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7. Assertion : During exercise, a person undergoes fatigue very soon.

Reason : During this period , muscle fibres undergo oxygen debt.

- A. If both Assertion and Reason are true and Reason is correct explanation of Assertion.
- B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

- C. If Assertion is true but Reason is false
- D. If both Asssertion and Reason are false.

Answer: A

8. Assertion : Pigeons and kites can fly for long period without undergoing fatigue.

Reason : These birds have white muscle fibres which undergo slow and sustained contraction for long period.

A. If both Assertion and Reason are true and Reason is correct

explanation of Assertion.

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

C. If Assertion is true but Reason is false

D. If both Asssertion and Reason are false.

Answer: C



9. Assertion : Cartilage (protein matrix) and bone (calcium matrix) are

rigid connective tissue.

Reason : Blood is connective tissue in which plasma is the matrix.

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

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

C. If Assertion is true but Reason is false

D. If both Asssertion and Reason are false.

Answer: B

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10. 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 Assertion and Reason are true and Reason is correct

explanation of Assertion.

B. If both Assertion and Reason are true but Reason is not correct

explanation of Assertion.

- C. If Assertion is true but Reason is false
- D. If both Asssertion and Reason are false.

Answer: A

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Objective Type Questions E Additional Multiple Questions

1. Volkman's canals occur in

A. Cartilage

B. Bone

C. Internal ear

D. Troponin

Answer: B

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2. ATPase enzyme needed for muscle contraction is located in

A. Myosin

B. Actin

C. Actinin

D. Troponin

Answer: A

3. Total number of bones found in right upper limb is:

A. 25 B. 26 C. 30

D. 60

Answer: C

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4. Nucleus pulposus occurs in

A. Brain

B. Liver

C. Kidney

D. Intervertebral discs

Answer: D

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5. Correct order of ear ossicles in rabbit is :

A. Incus, stapes, malleus

B. Malleus, incus, stapes

C. Malleus, stapes, incus

D. Incus, malleus, stapes

Answer: B

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6. Colle's fracture is associated with :

A. Femur

B. Ulna

C. Radius

D. Humerus

Answer: C

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7. Achilles tendon is associated with

A. Gluteus muscle

B. Hamstring muscle

C. Quadriceps muscle

D. Gastrocnemius muscle

Answer: D

8. Ribs attached to sternum are

A. First seven pairs

B. All ten pairs

C. First ten pairs

D. First five pairs

Answer: A

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9. Which of the following lubricates ligament and tendon and is the

important constituent of synovial fluid ?

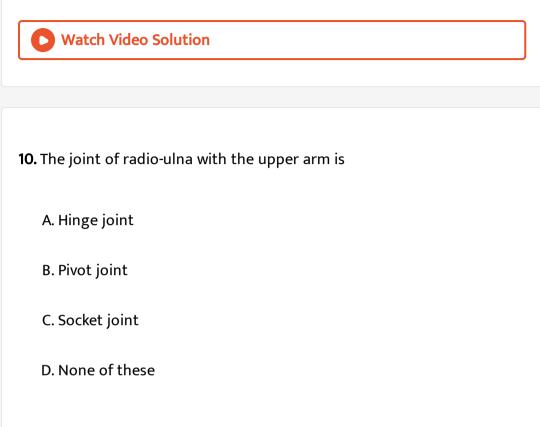
A. Pectins

B. Lipids

C. Hyaluronidase

D. Hyaluronic acid

Answer: D



Answer: A



11. Joints of femur with pelvic girdle is

A. Ball and socket

B. Pivot

C. Saddle

D. Hinge

Answer: A

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12. Synovial joint is :

A. Pivot joint

B. Fibrous joint

C. Ball and socket joint

D. All of these

Answer: C

13. _____ acts as a shock absorber to cushion when tibia and femur came together

A. Disc

B. Tendon

C. Ligament

D. Cartilage

Answer: D

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14. Which of the following assists in the locomotion of the organism

stated ?

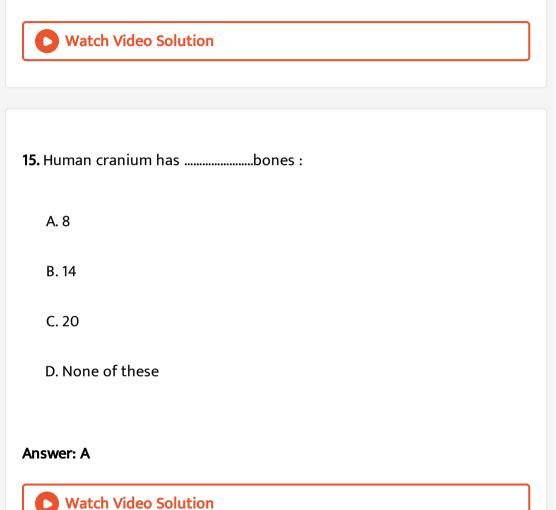
A. Pedicellaria of starfish

B. Epithelium of Pheretima

C. Trichocysts of Paramecium

D. Posterior sucker of Hirudinaria

Answer: D



16. Ear ossicle incus is modified form of :

A. Jugal bone

B. Quadrate bone

C. Articular bone

D. Hyomandibular bone

Answer: B

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17. exoskeleton is absent in

A. Scolidon

B. Frog

C. Rabbit

D. Fowl

Answer: B

18. Inter-articulated disc is found in

A. Muscules of arm

B. Vertebrae

C. Muscles of leg

D. Pubic symphysis

Answer: B

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19. Which of the following is important for muscle contraction and nerve

impulse transmission?

- A. $Ca^{+\,+}$
- B. Ca^{++} and Mg^{++}

C. Mg^{++}

D. Fe^{++}

Answer: B



20. During strenous exercise glucose is converted into

A. Starch

B. Glycogen

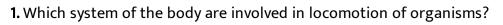
C. Pyruvic acid

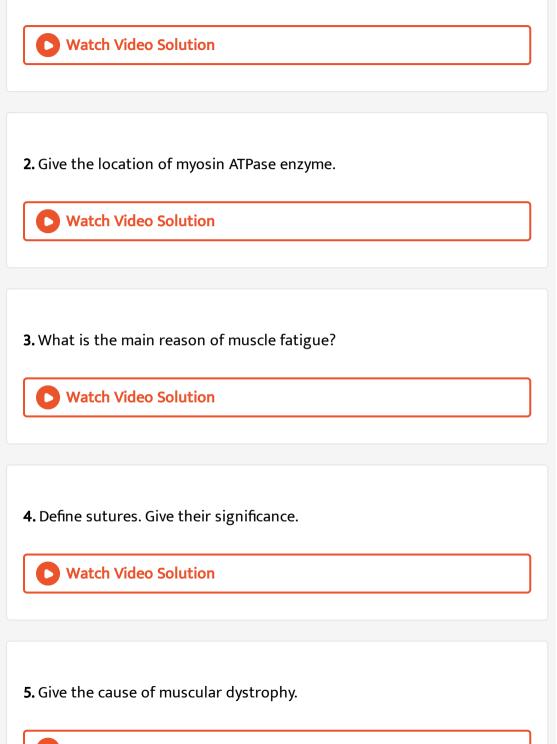
D. Lactic acid

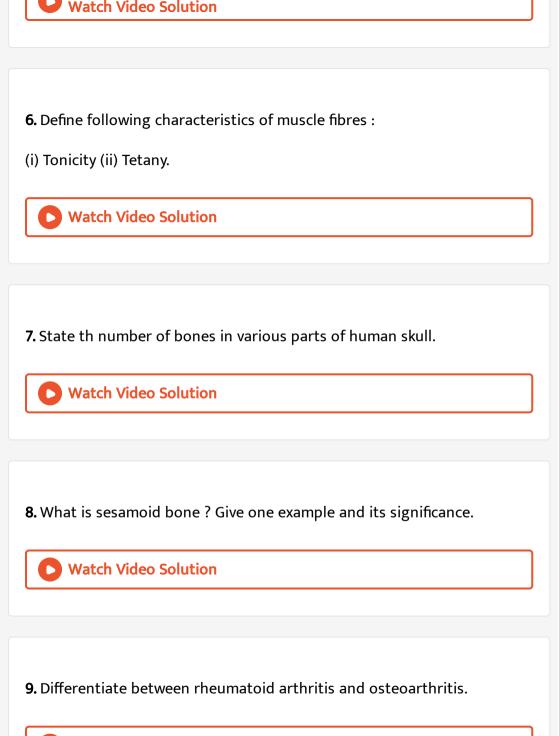
Answer: D



Chapter Practice Test







10. Define sliding filament theory of muscle contraction.

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11. Differentiate between red and white skeletal muscles fibres.
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12. Give cause and symptoms of :
(i) Myaesthaemia gravis (ii) Osteroporosis.
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Objective Type Questions

1. Which of the following muscular disorders is inherited?

A. Tetany

- B. Muscular dystrophy
- C. Myasthenia gravis
- D. Botulism

Answer: B



2. Select the correct option.

A. 8th, 9th ,and 10 pairs of ribs articulate directly with the sternum.

B. 11th and 12th pairs of ribs are connected to sternum by hyaline

cartilage.

C. Each rib is a flat thin bone and all the ribs are connected dorsally to

the thoracic vertebrae and ventrally to the sternum

D. There are seven pairs of vertebrosternal , three pairs of

vertebrochondral and two pairs of vertebral ribs.

Answer: D