



BIOLOGY

BOOKS - AAKASH SERIES

LOCOMOTION AND MOVEMENT

Exercise I Type Of Movement

1. Macrophages and leucocytes exhibit

A. ciliary movement

B. flagellar movement

C. amoeboid movement

D. gliding movement.

Answer: C



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Exercise I Muscle

1. The following diagram shows a thin myofilament of striated muscle fibre. Choose

the option that correctly identifies a part of it along with its feature.



A. A - Tropomyosin, it is distributed at regular intervals and has three subunits

B. A - Troponin, a subunit of it masks the active binding sites for myosin on the actin filaments

C. B - Troponin, two filaments of it run close to the 'F' actins throughout its length

D. C- 'G' actin, it is a polymer of 'F' actins

Answer: B



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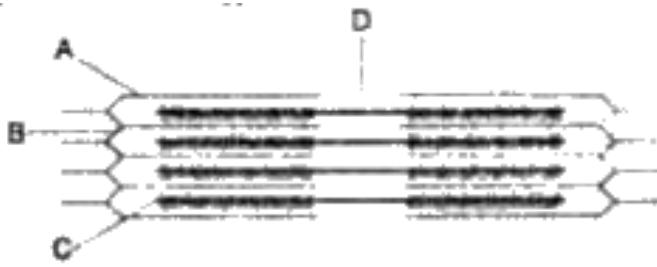
2. Identify the Incorrect match about muscle fibres

Red muscle	White muscle
1) More myoglobin	Less myoglobin
2) More sarcoplasmic reticulum	Less sarcoplasmic reticulum
3) More mitochondria	Fewer mitochondria
4) More vascular	Less vascular



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3. Which of the following is true for the labelled parts in the figure below?



A. A - Thin filament - Bears cross bridges

B. B - M line - Also called Krause's membrane

C. C- Thick filament - Made up of tropomyosin

D. D - H zone - I at the centre of A band

Answer: D



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4. When a neural signal reaching the neuromuscular junction releases acetylcholine, an action potential is generated first in

A. Sarcolemma

B. Sarcoplasmic reticulum

C. Sarcosomes

D. Sarcomeres

Answer: A



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5. Muscle fatigue is due to accumulation of

A. Myoglobin

B. Glucose

C. Lactic acid

D. Phosphocreatine

Answer: C



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6. In a myofibril, the thick filaments are held together in the middle of A-band by a thin fibrous membrane called

A. Z-line

B. K-line

C. M-line

D. H-line

Answer: C



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7. In a myofibril, each I band is bisected by

A. Z-line

B. K-line

C. M-line

D. H-line

Answer: A



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8. Which of the following has ATP binding site?

A. Light meromyosin

B. Troponin

C. Heavy meromyosin

D. Tropomyosin

Answer: C



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9. Thin myofilaments are made up of

A. Actin, tropomyosin and meromyosin

B. Tubulin and dynein

C. Heavy meromyosin and light

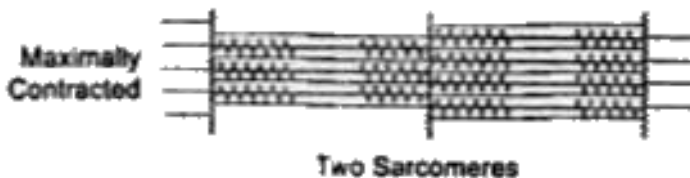
meromyosin

D. Actin, troponin and tropomyosin

Answer: D

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10. Which of the following is correct about the given figure?



- A. The length of the thick and thin filaments has changed
- B. The length of anisotropic band remained unchanged
- C. The length of isotropic band has increased
- D. The length of the thin filaments has decreased but the length of the thick filaments has remained unchanged

Answer: B



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11. The contractile element present in the myofibril of a striated muscle between two successive Z-lines is called

A. 1. Sarcosome

B. 2, Sarcoplasm

C. 3. Sarcomere

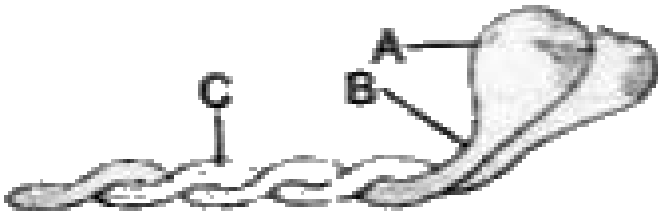
D. 4. Sarcoplasmic reticulum

Answer: C



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12. Study the following diagram and identify the correct option.



A. C is made up of actin whereas A and B are made up of tropomyosin

B. B and C are made up of light meromyosin

C. C has binding sites for ATP and actin

D. A and B are made up of heavy
meromyosin

Answer: D



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13. A skeletal muscle fibre is

A. 1. Binucleate

B. 2. Uninucleate

C. 3. Multinucleate

D. 4. Enucleate

Answer: C



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14. The tails of myosin are made up of

A. Light meromyosin

B. Globular actin

C. Heavy meromyosin

D. Filamentous actin

Answer: A



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15. White muscle fibres contain more

A. Sarcoplasmic reticulum

B. Myoglobin

C. Mitochondria

D. Blood supply

Answer: A



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16. ions that play a role in muscle contraction are

- A. Sodiuin ions
- B. Chloride ions
- C. Potassium ions
- D. Calcium ions

Answer: D



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17. Thin myofilaments are made up of

A. Actin, tropomyosin and meromyosin

B. Tubulin and dynein

C. Heavy meromyosin and light meromyosin

D. Actin, troponin and tropomyosin

Answer: C



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18. Skeletal muscle appears striated due to the presence of two characteristic proteins in alternating dark and light bands. Which of the following is a correct match of the protein with its light refractive property and colour?

	<i>Protein</i>	<i>Colour</i>	<i>Property</i>
1)	Actin	Light	Anisotropic
2)	Myosin	Dark	Anisotropic
3)	Actin	Dark	Isotropic
4)	Myosin	Dark	Isotropic



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19. During muscle contraction

- A. Thin myofilaments shorten
- B. Thick myofilaments shorten
- C. A band reduces in width
- D. H zone reduces in width

Answer: D



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20. Identify the correct statement

- A. 'F' actin a polymer of 'G' actin molecules
- B. Heavy meromyosin forms tail
- C. Light meromyosin forms head
- D. Each light meromyosin has two bindings sites

Answer: A



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21. Which of the following is true with regard to red muscle fibres?

A. 1. Short term contractions

B. 2. High intensity contractions

C. 3. More amount of sarcoplasmic reticulum

D. 4. More amount of oxygen storage

Answer: D



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22. Which of the following is a motor protein?

A. 1. 'F' actin

B. 2. 'G' actin

C. 3. Myosin

D. 4. Tropomyosin

Answer: C



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23. During muscle contraction

A. 1) Mechanical energy is changed into chemical energy

B. 2) Chemical energy is changed into mechanical energy

C. 3) Chemical energy is changed into electrical energy

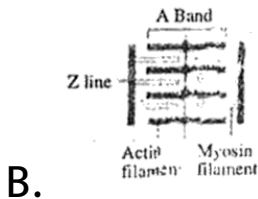
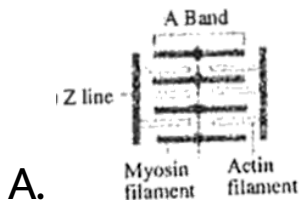
D. 4) Physical energy is changed into chemical energy

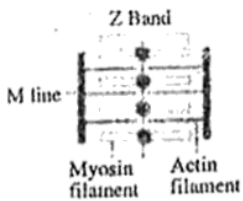
Answer: B



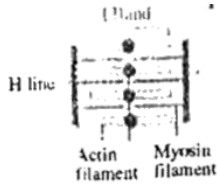
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24. Which of the following sarcomeres is labeled correctly?





C.



D.

Answer: A



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25. Identify the correct combination from the following

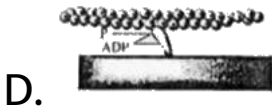
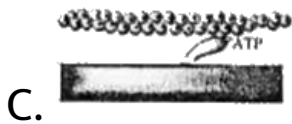
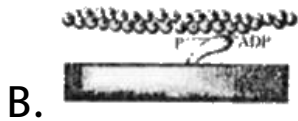
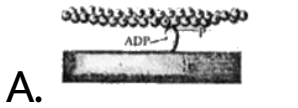
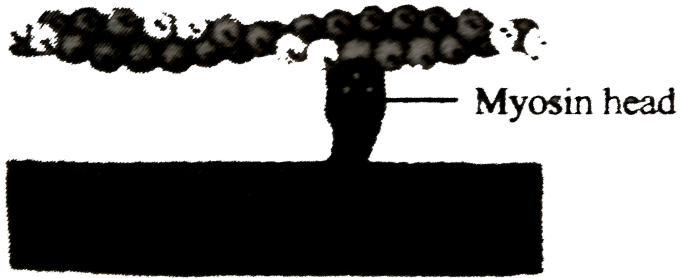
	Muscle	Characters	Location
1)	Skeletal muscle	i) Multinucleate ii) No sarcomeres	Diaphragm
2)	Smooth muscle	i) Involuntary ii) Fusiform cell	Trachea
3)	Iris muscle	i) Mesodermal ii) Involuntary	Eye
4)	Cardiac muscle	i) Intercalated discs ii) ANS	Epicardium



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26. Which one of the following options shows the next stage of muscle contraction after the

stage given in question ?



Answer: D





27. Identify the correct combination from the following

A. Amoeboid movement - streaming of protoplasm - Euglena

B. Flagellar movement - undulations - Spermatozoa

C. Ciliary movement - Metachronous rhythm - Acineta

D. Muscular movement - Contraction of myofibrils - peritendons

Answer: B

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28. Identify the correct match.

	Area of sarcomere	type of myofilaments
1)	H zone	Both actin and myosin
2)	I band	only myosin
3)	A band	only actin
4)	A-I junction	both actin and myosin

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29. Identify the incorrect match.

	Protein	Related to
1)	Troponin	I band
2)	Tropomyosin	A band
3)	Myosin	Thick filament
4)	F-actin	Thin filament



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30. Identify the correct combination

A. HMM - Actini - Head and tail

B. LMM - Myosin - neck and tail

C. Cross arm - Myosin - head and neck

D. Short arm - Actin - neck

Answer: C



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31. Identify the correct match.

	Muscle Contraction	Muscle Relaxation
1)	Troponin tropomyosin complex moves away from the active site	troponin tropomyosin complex masks the active site
2)	Z membranes move away from M-line	Z-membranes move towards M-line
3)	Recovery stroke occurs	Power stroke occurs
4)	Calcium ions re-enter into cisternae	Calcium ions move into sarcoplasm from cisternae



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32. Identify the incorrect match.

	Structure	Character	Function
1)	M-line	Thin fibrous membrane	Holds the thick filaments together
2)	Z-line	Elastic fibre	bisects I band
3)	Sarcoplasmic reticulum	Consists of terminal cisternae	Store house of calcium ions
4)	Myoblasts	Multinucleate	Form skeletal muscle fibre



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33. Identify the correct match about events related to muscle contraction

	Part of sarcomere	Change
1)	Actin filament	Shortened
2)	Myosin filament	lengthened
3)	I band	no change
4)	H-zone	become narrow

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34. Identify the correct match about one myofilament (Thick/thin).

	Structure	Number of units
1)	F-actin	Many filaments
2)	Tropomyosin	Two filaments
3)	Troponin	Four subunits
4)	Myosin	One head, two tails

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35. Which of the following is an ATPase enzyme?

A. 1. Troponin

B. 2. Light meromyosin

C. 3. Tropomyosin

D. 4. Heavy meromyosin'

Answer: D



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36. What is sarcomere ?

- A. Part between two H-lines
- B. Part between two A-lines
- C. Part between two I-bands
- D. Part between two Z-lines

Answer: D



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37. Match the following and mark the correct option

Column I		Column II
A. <i>Fast muscle fibres</i>	(i)	Myoglobin
B. <i>Slow muscle fibres</i>	(ii)	Lactic acid
C. <i>Actin filament</i>	(iii)	Contractile unit
D. <i>Sarcomere</i>	(iv)	I-band

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

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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38. ATPase of the muscle is located in

A. actinin

B. troponin

C. myosin

D. actin

Answer: C



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39. 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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40. Muscles with characteristic striations and in-voluntary 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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Exercise I Skeletal System

1. The total number of bones in the human skull is

A. 22

B. 28

C. 14

D. 29

Answer: D



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2. The number of pairs of true ribs is

A. 9 pairs

B. 7 pairs

C. 12 pairs

D. 2 pairs

Answer: B



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3. The bone that bears the acromion process is

A. Clavicle

B. Scapula

C. Humerus

D. Radius

Answer: B



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4. The total number of bones in the human skull is

A. 14

B. 22

C. 8

D. 29

Answer: A



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5. Largest triangular bone of the pectoral girdle

A. Clavicle

B. Coxal

C. Scapula

D. Ischium

Answer: C



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6. The number of occipital condyles in man is

A. 2

B. 1

C. 3

D. 4

Answer: A



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7. The bone with the glenoid cavity is

A. 1) Coccyx

B. 2) Sternum

C. 3) Scapula

D. 4) Skull

Answer: C



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8. The number of carpals and tarsals in the human skeleton are respectively

A. 1) 14 and 16

B. 2) 16 and 14

C. 3) 14 and 14

D. 4) 16 and 16

Answer: B



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9. The total number of bones that form the thoracic (rib) cage is

A. 36

B. 37

C. 25

D. 24

Answer: B



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10. Collar bone' is

A. Clavicle

B. Humerus

C. Scapula

D. Coracoid

Answer: A



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11. Which of the following represents the fusion of ilium, ischium and pubis?

A. Sacrum

B. Coxal bone

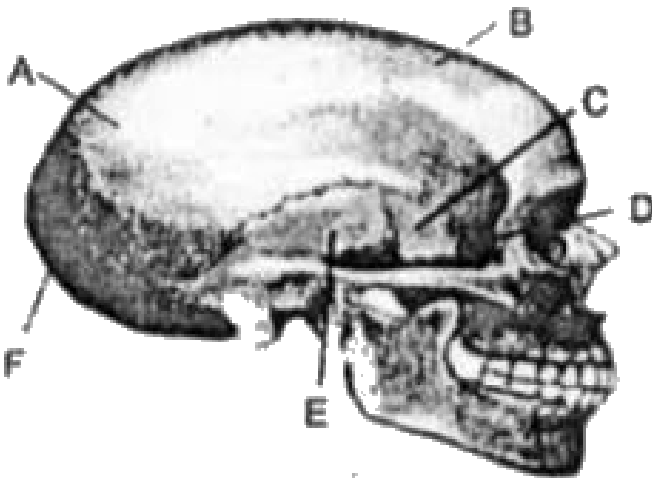
C. Coccyx

D. Collar bone

Answer: B



12. Study the following diagram of human skull and choose the option that correctly identifies two of the labels.



A. C - Sphenoid, E - Temporal

B. B - Parietal, D - Sphenoid

C. A - Frontal, F. Occipital

D. E - Occipital, F - Temporal

Answer: A



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13. The number of vertebrae present in cervical, thoracic, lumbar, sacral and coccyx regions are respectively

A. 7,12,6,1,1

B. 8,12,5,1,1

C. 7,12,5,1,1

D. 7,14,5,1,1

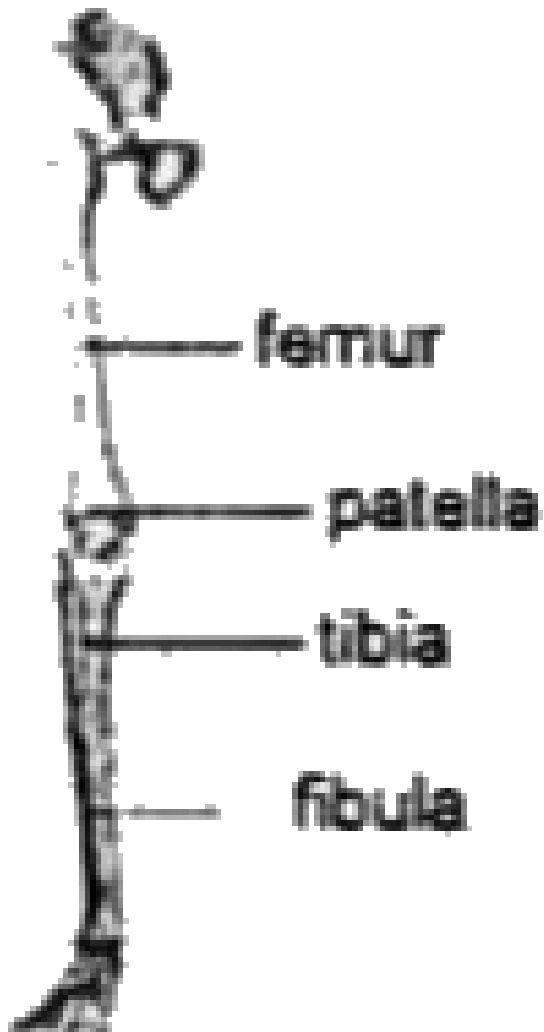
Answer: C



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14. The given diagram shows the front view of bones of the human lower limb. Which two

bones are wrongly labelled in it?



A. Femur and patella

B. Tibia and fibula

C. Patella and tibia

D. Fibula and femur

Answer: C



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15. Find the wrong match.

A. Humerus - upper arm

B. Metacarpals - palm

C. Radius and ulna - fore arm

D. Tarsals - wrist

Answer: D



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16. The number of vertebrochondral ribs in human is

A. 11th and 12th pairs

B. 8th, 9th and 10th pairs

C. Last five pairs

D. Last three pairs

Answer: B



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17. Choose the wrong match.

A. Cervical - 7 vertebrae

B. Lumbar - 5 vertebrae

C. Thoracic - 12 vertebrae

D. Sacrum - 4 fused vertebrae

Answer: D



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18. Find the correct option regarding the number of bones present in given part of axial skeleton

A. 55

B. 29

C. 80

D. 126

Answer: C



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19. which of the following is a part of the pectoral girdle ?

A. sternum

B. acetabulum

C. glenoid cavity

D. ilium

Answer: C



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20. The number of floating ribs, in the human body, is

A. 3 pairs

B. 2 pairs

C. 6 pairs

D. 5 pairs

Answer: B



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21. What are the total number of bones in right lower limb of a man

A. 24

B. 30

C. 14

D. 21

Answer: B



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22. Coxal bone is the component of

- A. pelvic girdle
- B. elbow joint
- C. pectoral girdle
- D. knee joint

Answer: A



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23. The bone not associated with the rib case/cage is

A. 1)Thoracic vertebrae

B. 2)Sternum

C. 3)Lumbar vertebrae

D. 4)Ribs

Answer: C



24. Which one is a part of appendicular skeleton?

A. Odontoid process

B. palatine process

C. Occipital condyle

D. Patella

Answer: D



25. Number of bones in cranium, face, hyoid and middle ear are respectively

A. 14, 8, 1 and 3

B. 8, 14, 1 and 3

C. 3, 8, 14 and 1.

D. 14, 8, 3 and 1

Answer: B



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26. The coxal bone of the pelvic girdle is formed by the fusion of

A. Ilium, ischium and pubis

B. Scapula and clavicle

C. Ilium and scapula

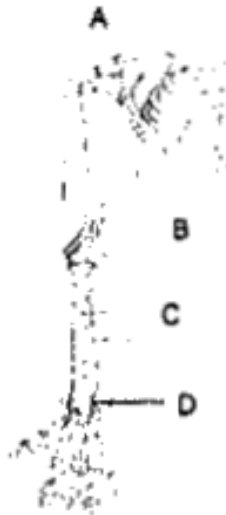
D. Ilium, scapula and ischium

Answer: A



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27. Examine the figure of pectoral girdle and forelimb and identify the parts labelled as A, B, C and D.

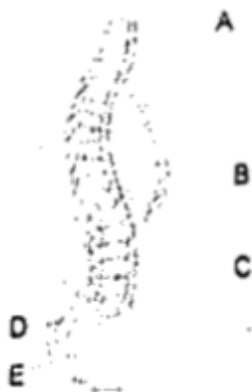


- | A | B | C | D |
|-------------|---------|--------|---------|
| 1) Clavicle | Humerus | Radius | Carpals |
| 2) Scapula | Femur | Ulna | Tarsals |
| 3) Clavicle | Femur | Radius | Carpals |
| 4) Scapula | Humerus | Ulna | Tarsals |



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28. Identify the parts labelled as A to E in the given figure of a vertebral column and select the correct option

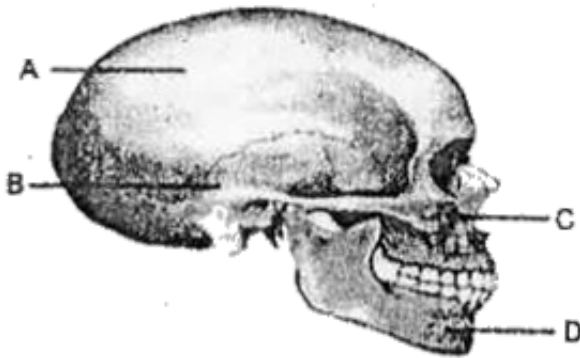


	A	B	C	D	E
1)	Thoracic	Cervical	Lumbar	Sacrum	Coccyx
2)	Thoracic	Cervical	Lumbar	Coccyx	Sacrum
3)	Lumbar	Thoracic	Cervical	Coccyx	Sacrum
4)	Cervical	Thoracic	Lumbar	Sacrum	Coccyx



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29. Examine the given diagrammatic view of human skull given below and identify the skull bones labelled from A-D.



	A	B	C	D
1)	Frontal	Temporal	Maxilla	Mandible
2)	Occipital	Frontal	Mandible	Maxilla
3)	Parietal	Temporal	Maxilla	Mandible
4)	Temporal	Parietal	Mandible	Maxilla



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30. Complete the following paragraph by selecting the correct option

Pelvic girdle consists of two coxal bones. Each coxal bone is formed by the fusion of three bones (i) ,(ii) and (ii) . At the point of fusion of the above bones is a cavity called (iv) to which the thigh bone articulates. The two halves of the pelvic girdle meet ventrally to form the pubic symphysis containing (v) cartilage.



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31. Identify the incorrect match

A. Facial bones - 14

B. Cranial bones - 8

C. Ear ossicle- 6 .

D. Occipital condyles - 4

Answer: D



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32. Identify the correct match about adult vertebral column

A. Thoracic vertebrae - 7

B. Lumbar vertebrae - 12

C. Sacral vertebrae - 1

D. Coccygeal vertebrae - 4

Answer: C



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33. Identify the bones which are related to axial skeleton

A. 1)Vomer, Scapula, Hyoid, Tarsal

B. 2)Patella, Hip bone, Scapula, Tibia

C. 3)Malleus, Coccyx, Sternum, Lacrimal

D. 4)Fibula, Sacrum, Clavicle, Zygomatic
bone

Answer: C



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34. Observe the following bones from A-D (belongs to I-III), identify the odd one in that given combination

	A	B	C	D
I)	Tibia	Tarsals	Carpals	Phalanges
II)	Scapula	Clavicle	Glenoid cavity	Ilium
III)	Coccyx	Coxal	Sacrum	Atlas

A. I-C, II-D, III-B

B. I-B, II-A, III-C

C. I-B, II-D, III-A

D. I-D, II-B, III-C

Answer: A



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35. Connection of bone to bone is by

A. Cartilage

B. tendon

C. muscle

D. ligament

Answer: D



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36. Sternum is connected to ribs by

- A. bony matter
- B. white fibrous cartilage
- C. hyaline cartilage
- D. areolar tissue

Answer: C



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37. Ribs are attached to

A. scapula

B. sternum

C. clavicle

D. ilium

Answer: B



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38. Intervertebral disc is found in the vertebral column of

A. birds

B. reptiles

C. mammals

D. amphibians

Answer: C



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39. Which one of the following is showing the correct sequential 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 - Jumbur - sacral - coccygeal

Answer: D



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40. 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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41. An acromian process is characteristically found in the

- A. Pelvic girdle of mammals
- B. Pectoral girdle of mammals
- C. Skull of frog
- D. Sperm of mammals

Answer: B



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Exercise I Joints

1. Type of joint present between carpal and metacarpal of thumb is

A. Condyloid joint

B. Saddle joint

C. Gliding joint

D. Pivot joint

Answer: B



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2. The type of joint between the human skull bones is called

A. cartilaginous joint

B. hinge joint

C. fibrous joint

D. synovial joint

Answer: C



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

A. gliding joint

B. hinge joint

C. pivot joint

D. saddle joint

Answer: C



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4. What is the name of joint between ribs and sternum ?

A. Cartilaginous joint

B. Angular joint

C. Gliding joint

D. Fibrous joint

Answer: A



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5. Which of the following pairs is correctly matched?

A. 1)Hinge joint - between vertebrae

B. 2)Gliding joint - between zygapophysies
of the successive vertebrae

C. 3)Cartilaginous joint - skull bones

D. 4)Fibrous joint - between phalanges

Answer: B



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6. What will happen if ligaments are torn?

- A. Bones will move freely at joint & no pain
- B. Bone will be less movable at joint & painful
- C. Bone will become unfixed
- D. Bone will become fixed

Answer: B



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7. 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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8. Which one of the following options is incorrect ?

A. Hinge joint - between humerus and pectoral girdle

B. Pivot joint- between atlas and axis

C. Gliding joint - between the carpals

D. Saddle joint - between carpel and metacarpals of thumb

Answer: A



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9. Knee joint and elbow joints are examples of

A. saddle joint

B. ball and socket joint

C. pivot joint

D. hinge joint.

Answer: D



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10. Match the followings and mark the correct option.

Column I	Column II
A. Sternum	(i) Synovial fluid
B. Glenoid cavity	(ii) Vertebrae
C. Freely movable joint	(iii) Pectoral girdle
D. Cartilaginous joint	(iv) Flat bones

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

B. $A - (iv)$, $B - (iii)$, $C - (I)$

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

D.

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

Answer: B



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Exercise I Disorders Of Muscular And Skeletal Systems

1. Which of the following is an autoimmune disorder leading to paralysis of skeletal muscle?

A. Myasthenia gravis

B. Myotonic dystrophy

C. Tetany

D. Muscular dystrophy

Answer: A



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2. Which of the following is a progressive degeneration of skeletal muscle that occurs mostly due to genetic disorder?

A. Muscular dystrophy

B. Tetany

C. Myasthenia gravis

D. Gout

Answer: A



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3. Gout disease is due to the accumulation of

A. Cholesterol

B. Uric acid

C. Lactic acid

D. Urea

Answer: B



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4. 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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Exercise II Muscle

1. In the region of A-band of a myofibril of a skeletal muscle where thick and thin filaments

overlap, each thin filament is surrounded by

- A. Three thin filaments
- B. Five thin filaments
- C. Two thin filaments
- D. Six thin filaments

Answer: D



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2. Correct order of stages of muscle contraction is

A. Stimuli → Neurotransmitter secretion

→ Release of calcium → Cross-

bridges formation - Excitation of T-

system → Sliding of actin filaments

B. Stimuli → Neurotransmitter secretion

→ Excitation of T-system Release of

Ca^{2+} → - Cross-bridges formation

→ Sliding of actin filaments → H^+

band diminishes

C. Stimuli → Excitation of T-system →

Neurotransmitter secretion → Cross

bridges formation → Sliding of actin

filaments → ' H^+ ' band diminishes

D. Stimuli → Neurotransmitter secretion

→ Cross-bridges formation →

Excitation of T-system → Sliding of

actin filaments.

Answer: B



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3. The first source of energy that is used to reconstitute the ATP in a contracting skeletal muscle is

- A. Glycogen
- B. Phosphocreatine
- C. Lactic acid
- D. Acetyl CoA

Answer: B



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4. Find the correct statement with regard to the arrangement of myosin molecules in a sarcomere

- A. All the tails face towards 'M' line
- B. All the heads face towards 'M' line
- C. Half of the heads towards one 'M' line

D. Half of the heads towards one 'Z' line
and other half towards 'M' line

Answer: A



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5. Cori's cycle involves

A. Gluconeogenesis in the muscle

B. Deamination in the liver

C. Gluconeogenesis in the liver

D. Urea synthesis in the liver

Answer: C



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6. In hurdle race, what is major source of energy to leg muscle

A. Lactate

B. Oxidative metabolism

C. Pyruvate

D. Anaerobic respiration

Answer: B



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7. Identify the incorrect combination.

Protein sub unit	Function
1) T_nI	initiate factor
2) T_nC	calcium ions bind to it
3) T_nT	tropomyosin binds to it
4) T_nI	Inhibitory factor



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8. Identify the incorrect combination from the following

A. Sarcomere - Part of myofibril between two Z lines

B. Motor unit - Set of skeletal muscle fibres and innervated by the afferent neuron

C. Triad system- T tubule and two sarcoplasmic reticulum cisternae either side

D. Motor endplate - The depression of sarcolemma opposite the synaptic end

bulbs

Answer: B



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9. Identify the correct match

A. Motor protein -mask and unmask the active site

B. Regulatory protein- Convert chemical energy into mechanical energy

C. Power stroke - Myosin head pulls the actin filaments towards H-zone

D. Recovery stroke - Movement of actomyosin towards M-line

Answer: C



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10. Identify the incorrect match about Cori cycle.

In Liver

- 1) initiated by lactic acid
- 2) lactate is converted into pyruvate
- 3) 2 ATP released
- 4) releases glucose into the blood

In Muscle

- initiated by glucose
- pyruvate is converted into lactate
- 6 ATP consumed
- releases lactate into the blood



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11. If the stimulus applied to a skeletal muscle fibre is just less than threshold stimulus, it will

- A. Not contract at all
- B. Contract with lesser force
- C. Contract with greater force

D. Contract with the same force

Answer: A



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12. The longest muscle in the human body is

A. gluteus maximus

B. stapedial muscle

C. sartorius muscle

D. gastrocnemius muscle

Answer: C



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13. Which of the following is true about muscle physiology?

A. A muscle fibres obey all-or-none law but

not a muscle

B. A muscle obeys all-or-none law but not a

muscle fibre

C. A muscle as well as muscle fibres obey all or-none law

D. Neither muscles nor muscle fibres obey all or-none law

Answer: A



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14. The resting tension in a muscle is termed

A. 1) muscle twitch

B. 2) muscle tremor

C. 3) muscle tone

D. 4) muscle fatigue

Answer: C



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15. Holding a book steady using an outstretched arm is an example for

A. concentric isotonic muscle contraction

B. isometric muscle contraction

C. eccentric isotonic muscle contraction

D. failure of muscle contraction

Answer: B



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16. The brief contraction of all the muscle fibres in a motor unit in response to a single action potential in its motor neuron is called

A. muscle tone

B. treppe

C. rigor mortis

D. muscle twitch

Answer: D



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17. We move our hands while walking for

A. Faster movement

B. Balancing

C. Increasing blood circulation

D. Relieving tension

Answer: B



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18. The muscle which moves a limb away from the median axis is called

A. 1)Supinator

B. 2)Pronator

C. 3)Abductor

D. 4)Adductor

Answer: C



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19. What kind of muscle is Latissimus dorsi?

A. trunk muscle

B. shoulder muscle

C. a leg muscle

D. eye muscle

Answer: A



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20. Achilles tendon is associated with

A. gluteus muscle

B. hamstring muscle

C. quadriceps muscle

D. gastrocnemius muscle

Answer: D



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21. When a muscle bends one part upon the other, it is called

A. 1)abductor

B. 2)adduction

C. 3)extensor

D. 4)flexor

Answer: D



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22. Accumulation of lactic acid in muscles

A. Lowers P^H

B. Increase pH

C. Is good for health

D. Removes fatigue

Answer: A



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23. In the region of A-band of a myofibril of a skeletal muscle where thick and thin filaments overlap. each thick filament is surrounded by

- A. Six thick filaments
- B. Two thick filaments
- C. Three thick filaments
- D. Four thick filaments

Answer: C



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24. Fast twitch muscle fibres have abundant

A. ER

B. mitochondria

C. myoglobin

D. haemoglobin

Answer: A



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25. Muscle that is attached to the malleus is

A. 1)Orbicularis oris

B. 2)Masseter

C. 3)Stapedius

D. 4)Tensor tympani

Answer: D



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26. The largest muscle in the human body is

A. Gluteus maximus

B. Stapedial muscle

C. Gastrocnemius

D. Sartorius muscle

Answer: D



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27. The stiffness of the body after death is due to which phenomenon.

- A. 1, Latent period
- B. 2. Refractory period
- C. 3. Rigor mortis
- D. 4. Tetanus

Answer: C



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Exercise II Skeletal System

1. Choose the wrong match

A. 1)Sutures - fibrous joints

B. 2)Saddle joints - synovial joints

C. 3)Condyloid joints - fibrous joints

D. 4)Symphyses - cartilaginous joints

Answer: C



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2. The pelvic girdle articulates to

A. Sacrum

B. Atlas

C. Coccyx

D. Axis

Answer: A



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3. The medial, weight-bearing bone of the leg is

A. Radius

B. Fibula

C. Ulna

D. Tibia

Answer: D



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4. The only bone of the skull that does not articulate with any other bone is

A. Mandible

B. Malleus

C. Hyoid

D. Zygomatic

Answer: C



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5. The total number of vertebrae during early development is

A. A)33

B. B)29

C. C)26

D. D)30

Answer: A



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6. Why are the lumbar vertebrae the largest and strongest in the vertebral column?

A. Atlas

B. Axis

C. Thoracic

D. Lumbar

Answer: D



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7. The number of paired bones in the axial skeleton of an adult human is

A. 23

B. 34

C. 40

D. 48

Answer: A



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8. All of the following structures in the human skeleton are made up of a single bone except

A. Lower jaw

B. Hyoid

C. Upper jaw

D. Zygomatic arch

Answer: C



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9. The number of unpaired bones in the axial skeleton of an adult human is

A. 40

B. 34

C. 58

D. 2

Answer: B



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10. The smallest bone of the face is

A. Lacrimal Bone

B. Palatines

C. Vomer

D. Mandible

Answer: A



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11. The bone that bears coracoid process is

A. Clavicle

B. Humerus

C. Scapula

D. Pubis

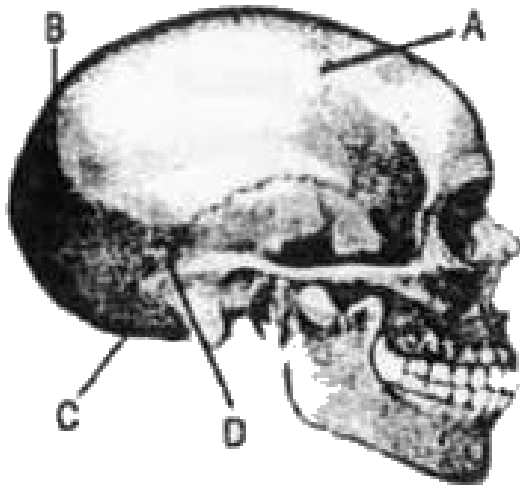
Answer: C



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12. Study the following diagram of human skull and choose the option that correctly identifies

one of the labels.



A. 1) B-Sagittal suture

B. 2) D-Lambdoid suture

C. 3) C-Squamous suture

D. 4) A-Coronal suture

Answer: D



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13. Coronal suture is formed in between

- A. Parietal and occipital
- B. Parietal and parietal
- C. Parietal and frontal
- D. Parietal and temporal

Answer: C



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14. The bone with foramen of magnum is

A. Frontal

B. Temporal

C. Occipital

D. Sphenoid

Answer: C



[Watch Video Solution](#)

15. The longest and strongest bone of skull is

A. Hyoid

B. Maxilla

C. Zygomatic

D. Mandible

Answer: D



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16. Scroll like bones that form lateral wall of nasal cavity are called

A. Nasals

B. Nasal conchae

C. Palatines

D. Lacrimals

Answer: B



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17. Except ear ossicles the only movable skull bone is

A. Vomer

B. Maxilla

C. Mandible

D. Zygomatic

Answer: C



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18. Arrange the bones in ascending order w.r.t. length

A. Stapes lacrimal Mandible Tibia

B. Stapes Mandible Lacrimal Femur

C. Femur Mandible lacrimal Stapes

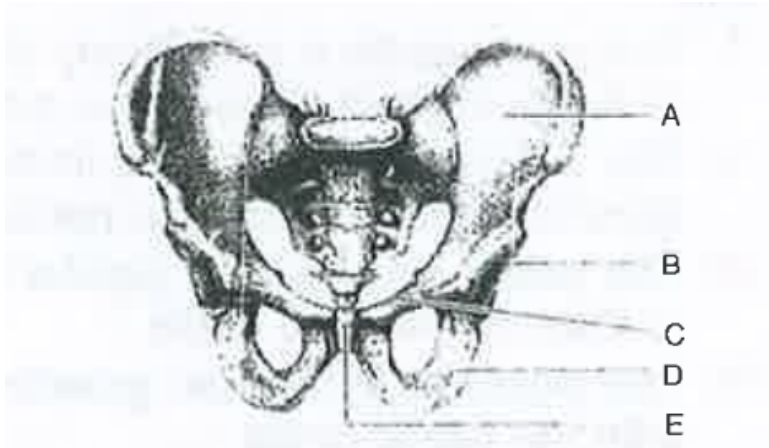
D. Femur stapes ulna radius

Answer: A



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19. In the pelvic girdle of man A,B,C,D and E respectively represent



A. 1) A-Pubis, B-Sacrum, C-Coccyx, D-Acetabulum, E-Pubic symphysis

B. 2) A-Ilium, B-Sacrum, C-Coccyx, D-Acetabulum, E-Pubic symphysis

C. 3)A-Ilium, B-Coccyx, C-Sacrum, D-

Acetabulum, E-Pubic symphysis

D. 4)A-Ilium, B-Sacrum, C-Coccyx, D-Pubic

symphysis, E-Acetabulum

Answer: B



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20. Identify the correct match.

A. Parietal bone - Lateral wall and floor of the cranial cavity

B. Sphenoid bone - Keystone bone

C. Occipital bone - Anterior base of the skull

D. Temporal · Lateral wall and roof of the cranial cavity

Answer: B



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21. Identify the incorrect statement

A. Femur is the longest bone

B. Stapes is smallest bone found in ear

C. Stapedius is smallest muscle in our body

D. Turbinal bones can be traced in
forelimbs

Answer: D



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22. Identify the correct match from the following

A. 1)Acetabulum - Pectoral girdle

B. 2)Glenoid cavity - Pelvic girdle

C. 3)Centrum - Vertebrae

D. 4)Manubrium - Ribs

Answer: C



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23. Sprain is due to excessive pulling of

A. Tendon

B. Neuron

C. Muscle

D. Ligament

Answer: D



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24. Epiphyseal plate helps in the

- A. thickness of bone
- B. elongation of bone
- C. formation of bone
- D. all of these

Answer: B



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25. In mammals the lower jaw is made of

A. dentary

B. maxilla

C. angular

D. articular

Answer: A



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26. Greater trochanter and lesser trochanter occur in

A. Humerus

B. Femur

C. Radio-ulna

D. Tibio-fibula

Answer: B



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27. Standing on tip toe example of

A. Elevation

B. Flexion

C. Depression

D. Retraction

Answer: A



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28. The thumb is also known as

A. Hallux

B. Prehallux

C. Calcar

D. Pollex

Answer: D



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29. What will happen if ligaments are torn?

A. bones will be move freely at joints. & no
pain

B. bone will be less movable at joint &
painful

C. bone will become unfixed

D. bone will become fixed

Answer: B



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30. Identify the incorrect combination

A. Incus-modified quadrate

B. Stapes-modified hyoid

C. Malleus-modified articular

D. Patella-ossified tendon

Answer: B



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31. The major constituent of vertebrate bone is

A. Calcium phosphate

B. Sodium chloride

C. Calcium carbonate

D. Collagen

Answer: A



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32. The bones involved in the formation of hard palate are

- A. Mandible and nasal conchae
- B. Maxillae and palatines
- C. Lacrimals and zygomatics
- D. Vomer and nasals

Answer: B



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33. Which of the following is a sesamoid bone?

A. Clavicle

B. Pisiform

C. Patella

D. Pterygoid

Answer: B



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34. Bone formed by ossification of tendon is

A. Zygomatic

B. Vomer

C. Patella

D. Coccyx

Answer: C



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35. The smallest bone in the body helps in

A. Haemopoiesis

B. Protection to delicate parts

C. Transmission of sound waves

D. Providing surface for attachment of
muscles

Answer: C



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36. The sesamoid bone in the wrist is

A. Scaphoid

B. Pisiform

C. Lunate

D. Trapezium

Answer: B



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37. The number of phalanges in the index finger is

A. 2

B. 1

C. 4

D. 3

Answer: D



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38. Number of phalanges in the thumb is

A. Three

B. One

C. Four

D. Two

Answer: D



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39. The unpaired process of a typical vertebra of man is

A. Spinous process

B. Superior articular process

C. Transverse process

D. Inferior articular process

Answer: A



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40. The bone of the upper limb with a deltoid tuberosity is

A. Radius

B. Pisiform

C. Ulna

D. Humerus

Answer: D



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41. A bone that is formed within the mesenchyme is called

A. Endochondral bone

B. Replacing bone

C. Sesamoid bone

D. Dermal bone

Answer: D



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42. The vertebra that bears the dens is

A. Atlas

B. Axis

C. C3

D. C7

Answer: B



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43. Yellow bone marrow is found especially in the medullary cavity of

A. Short bones

B. Spongy bones

C. Long bones

D. All of these

Answer: C



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44. Talus is a/an

A. Ankle bone

B. Collar bone

C. Wrist bone

D. Palm bone

Answer: A



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45. The membrane bone in the appendicular skeleton is

A. Clavicle

B. Parietal

C. Scapula

D. Humerus

Answer: A



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46. If a bone splinters at the site of impact and smaller bone fragments lie between the two main fragments, it is called

- A. compound fracture
- B. impacted fracture
- C. stress fracture
- D. comminuted fracture

Answer: D



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47. Sharpey's fibres, are composed of

A. Collagen

B. Elastin

C. Gelatin

D. Chitin

Answer: A



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48. A lateral deviation of the alignment of the vertebral column is called

A. Kyphosis

B. Scoliosis

C. Lordosis

D. Cyanosis

Answer: B



49. 'Soft spots' in the skull of a new-born infant are

- A. Sutures
- B. Fontanel
- C. Foramina
- D. Facets

Answer: B



Exercise II Joints

1. Which of the following is a cartilaginous joint?

A. Gomphosis

B. Suture

C. Syndesmosis

D. Symphysis

Answer: D



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2. Which of the following joints enable the palm to turn anteriorly and posteriorly is

A. Ball and socket joint between scapula and humerus

B. Saddle joint between the carpal and metacarpal of the thumb

C. Hinge joint between the capitulum of the humerus and the head of the radius

D. Pivot joint between the head of the radius and the radial notch of the ulna

Answer: D



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3. Which of the following is a ball and socket joint?

A. hip joint

B. elbow joint

C. atlanto-axial joint

D. knee joint

Answer: A



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4. The joint not associated with the upper limb bones of humans is

A. Condyloid joint

B. Synarthrosis

C. Saddle joint

D. Hinge joint

Answer: B



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5. Identify the correct match.

	Joint	Example	Movement
1)	Syndesmosis	Interosseous membrane between tibia and fibula	Synarthrosis
2)	Symphysis	Intervertebral disc	Amphiarthrosis
3)	Pivot joint	Atlas and axis	Synarthrosis
4)	Gomphosis	dento-alveolar joint	Amphiarthrosis



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6. Identify the set of fibrous joints from the following.

A. Condylod, Pivot, gomphosis

B. Synchronosis, syndesmosis, ball and
socket

C. Gomphoses, sutures, syndesmoses

D. Hinge joint, saddle joint, gliding joint

Answer: C



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7. Consider the following four statements (P-S) related to synovial joints and select the correct option stating which ones are true (T) and which ones are false.(F). P) Hip joint is a ball and socket joint Q)Joint between radius and ulna in the forearm is a hinge joint R)Joint between occipital and first vertebrae is a pivot joint S) Joint between carpal and metacarpal of a thumb is a saddle joint

A. *P Q R S*
T T T T

B. *P Q R S*
F F F F

- C. P Q R S
 T F T T
- D. P Q R S
 T F F T

Answer: D



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8. Identify the correct the statement

- A. All amphiarthroses are fibrous joints
- B. All synovial joints are amphiarthroses
- C. All cartilaginous joints are synarthroses

D. All sutures are synarthroses

Answer: D



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9. Which of the following are amphiarthroses?

A. Sutures, gomphoses, synchondroses

B. Pivot, hinge, saddle

C. Syndesmoses, symphyses

D. Gliding joints, condyloid joints

Answer: C



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10. Which of the following lubricates ligament and tendon and is the important constituent of synovial fluid?

A. Chitin

B. Lipids

C. Hyaluronidase

D. Hyaluronic acid

Answer: D



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11. Joint that produces an angular motion and permits only flexion and extension is

- A. gliding joint
- B. hinge joint
- C. pivot joint
- D. ball and socket joint

Answer: B



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12. joint where synovial capsule and synovial fluid are lacking is

- A. Intercarpal joint
- B. Pubic symphysis
- C. Interphalangeal joint
- D. Hip joint

Answer: B



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13. Which of the following has more number of joints?

A. Pectoral girdle

B. Pelvic girdle

C. Mandible

D. Cranium

Answer: D



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14. How many saddle joints can be traced in human limbs?

A. 2

B. 4

C. 8

D. 10

Answer: A



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Exercise II Disorders Of Muscular And Skeletal Systems

1. Gout disease in humans is due to

- A. Excessive production of uricase
- B. Impaired catabolism of pyrimidines
- C. Excessive excretion of uric acid

D. Excessive catabolism of purines

Answer: D



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Exercise Iii Previous Aipmt Neet Questions

1. 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 and ventrally to the sternum.

B. $X = 12$, $Y = 5$ True ribs are attached dorsally to vertebral column and sternum on the two ends

C. $X = 24$, $Y=7$ True ribs are dorsally attached to vertebral column but are free on ventral side.

D. $X = 24$, $Y = 12$ True ribs are dorsally attached to vertebral column but are free on ventral side.

Answer: A



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

as

A. spasm

B. fatigue

C. tetanus

D. tonus

Answer: C



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3. It is much easier for a small animal to run uphill than for a large animal because

- A. It is easier to carry a small body weight
- B. Smaller animals have a higher metabolic rate
- C. Small animals have a lower O₂ requirement
- D. The efficiency of muscles in large animals is less than in the small animals

Answer: B



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4. Name the ion responsible for unmasking of active sites for myosin for cross bridge bridge activity during muscle contraction.

A. Calcium

B. Magnesium

C. Sodium

D. Potassium

Answer: A



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5. Osteoporosis, an age-related disease of the 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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6. Which of the following is not a function of the skeletal system

A. Production of body heat

B. Locomotion

C. Production of erythrocytes

D. Storage of minerals

Answer: A



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7. Which of the following joints would allow to movement?

A. Synovial joint

B. Ball and socket joint

C. Fibrous joint

D. Cartilaginous joint

Answer: C



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8. Sliding filament theory can be best explained as

A. actin and myosin filaments do not shorten but rather slide past each other

- B. when myofilaments slide past each other
myosin filaments shorten while actin
filaments do not shorten
- C. when myofilaments slide past each other
actin filaments shorten while myosin
filaments do not shorten
- D. actin and myosin filaments shorten and
slide past each other

Answer: A



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9. Glenoid cavity articulates

- A. clavicle with scapula
- B. humerus with scapula
- C. clavicle with acromion
- D. scapula with acromion

Answer: B



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

	Type of joint	Example
1)	Cartilaginous joint	between frontal and parietal
2)	Pivot joint	between third and fourth cervical vertebrae
3)	Hinge joint	between humerus and pectoral girdle
4)	Gliding joint	between carpals



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11. Stimulation of a muscle fiber by a motor neuron occurs at

A. the neuromuscular junction

B. the transverse tubules

C. the myofibril

D. the sarcoplasmic reticulum

Answer: A



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

A. The vertebral column has 10 thoracic vertebrae

B. The joint between adjacent vertebrae is a fibrous joint

C. A decreased level of progesterone causes osteoporosis in old people

D. Accumulation of uric acid crystals in joints causes their inflammation

Answer: D



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

A. The central gap between actin filaments extending through myosin filaments in the A-b and

B. Extension of myosin filaments in the central portion of the A-band

C. The absence of myofibrils in the central portion of A-band

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

Answer: A



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14. The characteristics and an example of a synovial joint in humans is

Characteristics	Examples
(1) fluid filled synovial cavity between two bones	joint between atlas and axis
(2) lymph filled between two bones, limited movement	gliding joint between carpals
(3) fluid cartilage between two bones, limited movements	Knee joint
(4) fluid filled between two joints, provides cushion	Skull bones



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15. During muscle contraction

A. Sarcomere does not shorten

B. A band remains same

C. A, H and I bands shorten

D. actin filaments shorten

Answer: B



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16. Select the correct statement with respect to disorders of muscles in humans.

- A. Failure of neuromuscular transmission in myasthenia gravis can prevent normal swallowing
- B. Accumulation of urea and creatine in the joints causes their inflammation.
- C. An overdose of vitamin D causes osteoporosis.
- D. Rapid contractions of skeletal muscles cause muscle dystrophy.

Answer: A



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17. Select the correct statement regarding the specific disorder of muscular of skeletal system

A. Muscular dystrophy - Age related shortening of muscles

B. Osteoporosis - Decrease in bone mass and higher chances of fractures with advancing age.

C. Myasthenia gravis - Autoimmune

disorder which inhibits sliding of myosin filaments.

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

Answer: B



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18. Which one of the following pairs of chemical substance is correctly categorised?

A. Calcitonin and thymosin - 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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19. The type of muscle present in our

A. Heart is involuntary and unstriated smooth muscle

B. Intestine is striated and involuntary

C. Thigh is striated and voluntary

D. Upper arm is smooth muscle and fusiform

Answer: C



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20. 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

Pairs of skeletal parts Category



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21. Which one of the following pairs of structure is correctly matches with their correct description?

Sturctures Description



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

A. Parietal bone and the 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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23. Wich one of the following is the correct
matching of three items and their grouping
category?



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24. Elbow joint is

A. hinge joint

B. gliding joint

C. ball and socket joint

D. pivot joint

Answer: A



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

A. Types of diabetes - 3

B. Cervical vertebrae in humans - 8

C. Floating ribs in humans - 4

D. Amino acids found in proteins - 16

Answer: C



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26. In human body, which one of the following 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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