

SUPPORT AND MOVEMENT IN PLANTS AND ANIMALS

1. (a) K - Facet for articulation, with the next vertebra
L - Transverse process for attachment of muscles
- (b) Cervical or neck region

2.

- Skeletal muscles have actin and myosin which facilitate contraction and relaxation.
- High density of mitochondria to provide energy for contraction.
- Elongated fibres to allow change in length

3. (i) Ball and socket joint

(ii) Biceps (flexor muscles) relax triceps (extensor muscles) contract.

1.

	Biceps	Gut muscles
(i)	Striated	Un- striated
(ii)	Multinucleated	Un- nucleated
(iii)	Long fibre cylindrical	Short fibred Spindle shaped

2. (a) Femur

(b) Ball and socket joint

3.

- a. Attachment of powerful back muscles
- b. Maintain posture
- c. Maintain flexibility of vertebral column

4. (a)

- a. Hydrostatic
- b. Exoskeleton
- c. Endoskeleton

(b) Cervical vertebrae

- Presence of vertebral canal for passage of vertebral artery. Atlas has (broad) surfaces, for articulation with condyles of skull to permit nodding
- Axis has odontoid process/ projection Centrum to permit rotary/ turning. Act as a pivot for atlas.
- Branched/ forked/ short and broad transverse processes for attachment of neck muscles
- Presence of zygapophysis for articulation between vertebrae
- Has short reduced neural spine for attachment of neck muscles. Has wide neural canal for passage of spinal cord and protect it.

Lumbar

- Broad / long neural spine for attachment of powerful back muscles.
- Large and well developed transverse processes for attachment of muscles
- Has metamorphosis and hypophysis for muscle attachment. Large thick centrum for support.
- Prezygapophysis and post zygapophysis present for articulation between vertebrae

Sacral vertebrae

- Interior has well developed transverse processes which are fused to the pelvic girdle.
- Vertebrae fused for strength transmit weight of the stationary animal to the rest of the body
- Sacrum has a broad base/ short neural spine for attachment of back muscles

5.

- (a) Ulna
- (b) Radius
- (c) Humerus

6.

- (a) Inter- vertebral discs/ Fibro cartilage
- (b) Absorb shock and reduce friction between the bones

7. Side walls have deposition of lignin to strengthen them

8.

- (a) Y- Femur
Y- Tibia
Z- Fibula
- (b) (i) Synovial fluid
(ii) Absorb shock/ reduce friction between joints
- (c) Ligament
- (d) Ball and socket – allow movement in all direction
Hinge joint- Allow movement in one plane only

(e) Sigmoid notch

9.

(a) Have short neural spines

(b) - Xylem tissues

- Collenchymas tissues

- Sclerenchyma tissues

- Parenchyma tissues

10. (a)

Type of muscle	Where found
(i) Skeletal	Attached bones and skeleton
(ii) Smooth	Walls of tubular structures
(iii) Cardiac	Heart muscles

(b) Ball and socket joint – allows movement in all directions i.e 360°

Hinge joint- Allows movement only on one plane i.e 180°

(c) It is a slippery fluid that lubricates the joints reducing friction during movement.

(d) - Prevents drying out of organism

- Controls size of the organism

- Provides protection against microbial infections and mechanical injury.

11.

a. Support and protects inner delicate tissues

b. Prevents excessive loss of water from body tissues

c. Provides surfaces for muscle attachment.

12.

(a) Dorsal fin – Prevented rolling or yawing

(b) Pectoral and pelvic fins- used for steering and prevent pitching

(c) Caudal fin – steering and forward propulsion

13.

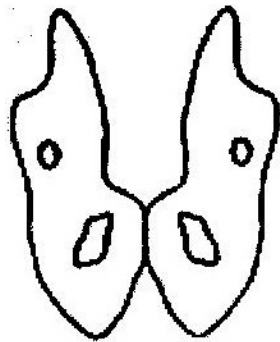
a. Contract spontaneously and do not fatigue.

b. Innervated by the autonomic nervous system

c. Contractions are initiated from within the muscles

d. They are myogenic

14. (a)



c) Femur – Articulates with acetabulum

Sacrum – articulates with ilium

15. Tendons – Tissues between muscles and bone in a joint

Ligaments – Tissues between bone and another bone in a joint

16. They are muscles that contract while the others relax e.g triceps and biceps muscles.

17. (a)

- Xylem vessels

- Collenchyma
- Sclerenchyma

(b) Xylem- lignified on the side walls

Collenchyma – thickened by deposition of cellulose and pectic compounds

Sclerenchyma – lignified on the cell walls.

18. (a)
- Immovable joints
 - Synovial (movable) joints)
 - Gliding/ sliding joints

- (b)
- Immovable joint – Cranium / skull
 - Synovial joint – between limbs
 - Gliding / sliding joint- vertebral column

- 19.
- Turgidity of the parenchyma cells
 - Presence of collenchyma tissues

20. Skeletal muscle

- a. Attached to the skeleton
- b. They are striated/ fibres that allow contractions
- c. Presence of mitochondria to provide energy for contractions
- d. Have antagonistic contractions to enhance movement

Cardiac muscle

- a. They are the heart muscles

- b. Highly connective tissues to allow harmonious contraction
- c. They do not fatigue
- d. Ends are intercalated to transmit impulses throughout the heart

Smooth muscle

- a. Walls of tubular organs
- b. Capable contracting slowly
- c. Innervated by autonomic nervous
- d. System/ involuntary movement