CHAPTER 20
LOCOMOTION AND MOVEMENT
QUESTIONS AND ANSWERS

ONE MARK

1. **What is locomotion?**
   The voluntary movements result in change of place/location.
2. **Give two examples for locomotion.**
   Walking and climbing
3. **what is movement?**
   The voluntary or involuntary activity result in change in postion of body.
4. **name the primary germ layer from which muscle tissue arises**
   Mesoderm.
5. **how much percentage of body weight is made up of muscle?**
   40-50%
6. **Name the proteins present in muscle fibres.**
   Actin and myosin.
7. **Neurotransmitter that generates the action potential in the sarcolemma.**
   Acetylcholine.
8. **Name the energy which is stored in muscle cells.**
   Adenosine – tri – phosphate(AT.P)
9. **Name the stored food material in muscle cells.**
   Glycogen.
10. **Why skeletal muscle cells undergo fatigue.**
    Because glycogen undergo anaerobic respiration to form lactic acid.
11. **Some of the muscle fibres are red in colour. why?**
    Due to the presence of red coloured 02 storing pigment called myoglobin.
12. **Name muscle fibres which undergo aerobic respiration.**
    Red fibers.
13. **how many are present in human body?**
    206 bones.
14. **How many bones are present in human skull.**
    22 bones.
15. **Give the names of ear ossicles/bones.**
    a. Malleus b. Incus and c. stapes.
16. **How many condyles are present in human skill.**
    Two condyles (bicondyles).
17. **How many vertebrae are present in human vertebral column?**
    26 vertebrae.
18. **what is sternum?**
    It is a flat bone on the ventral midline of thorax.
19. **how many ribs are presents in human ribcage.**
    12 pairs of flattened bones.
20. **Name the first vertebra which articubte with condyles.**
    Atlas vertebra.
21. **Give the names of hand / forelimb bones.**
    Humerus, Radius, Ulna, Carpals, Metacarpals and Phallanges.
22. **Name the largest bone in human body.**
    Femur.
23. **Give the names of leg/hindlimb bones.**
    Femur, Tibia, Fibula, Tarsals, Metatarsals and phalanges.

24. Name cup shaped bone which cover the knee.
Patella.
25. Name the cavity in which humerus articulate with that.
Glenoid cavity.
26. Name the theory which explained about mechanism of muscle contraction.
Sliding filament theory.
27. what is the neuromuscular junction?
The junction between a motor neuran and sarcolemma of the muscle fibre is called the neuromuscular junction/ motor end plate.
28. Name the inorganic ions bind to the actin filament.
Calcium ions.
29. Name the energy used to form cross bridge between actin and myosin.
Adenosine – triphosphate (ATP)
30. what happens to the I bands during contraction.
Shortening of I bands.
31. what happens to the A bands during contraction.
A band remain same.

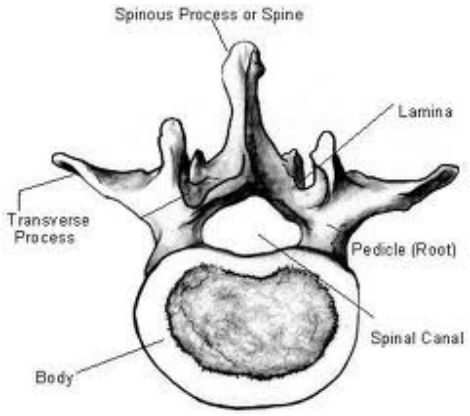
TWO MARKS

32. Locomoction is necessary for organism. Why?
a.Search of food.
b.Search of shelter.
c.Mate with opposite sexes.
d.Search of suitable breeding ground.
e.Search of favorable climatic conditions.
f.To escape from enemies /Predators.

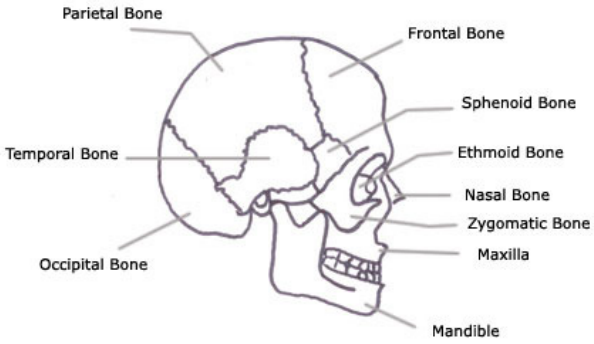
33. Mention the types of movements in human body.
a.Amaeboid movement
b.Ciliary movement
c.Muscular movement
34. Give two examples for movement.
Movement of tentacles in hydra.
Movement of jaw in human
35. Mention special properties of muscle.
a. Excitability.
b. Contractability
c. Extensibility
d. Elasticity.
36. Name the locomotary organs of the following .
a.Amaeba-Pseudopodia b.Paramaecium-Cilia c.Euglena - Flagellum d. Human- limbs

FOUR MARKS

37. Draw a neat labeled diagram of typical vertebra.

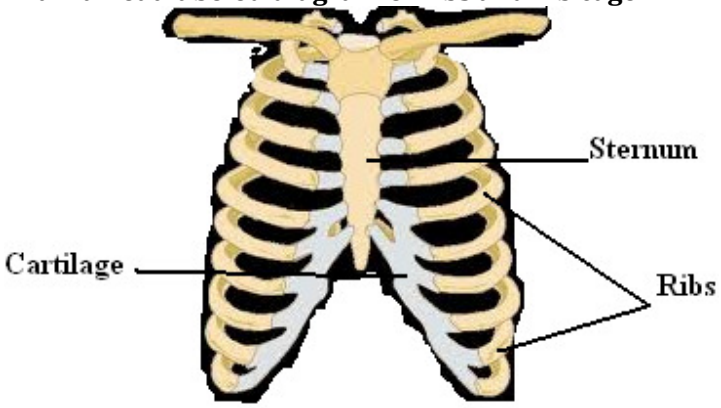


38. Draw a neat labeled diagram of human skull.



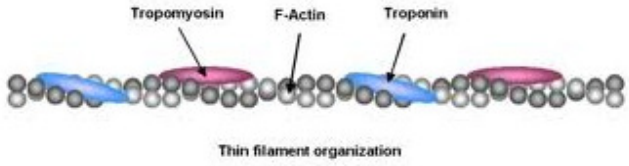
SKULL DIAGRAM WITH LABELS

39. Draw a neat labeled diagram of ribs and rib cage.



40. Draw neat labeled diagrams of the following.

a) Actin

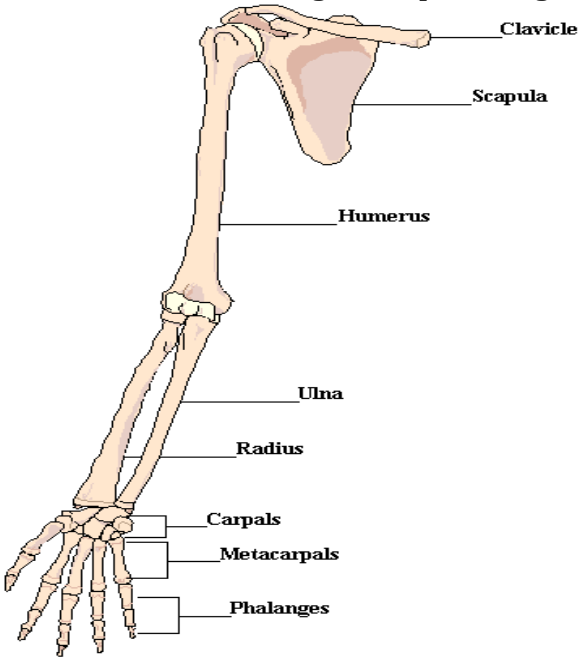


Thin filament organization

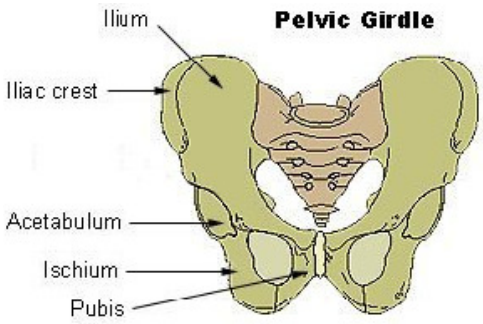
b) Myosin

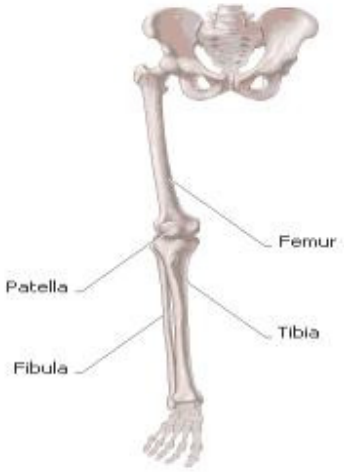
FIVE MARKS

41. Draw a neat labeled diagram of pectoral girdle and upper arm.

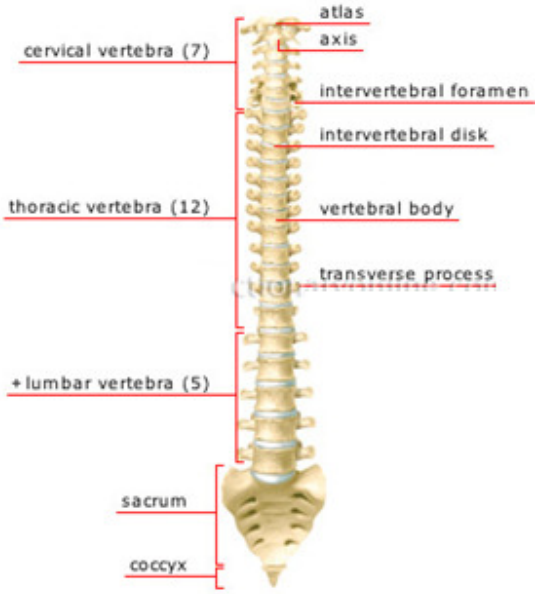


42. Draw a neat labeled diagram of pelvic girdle and lower limb bones.





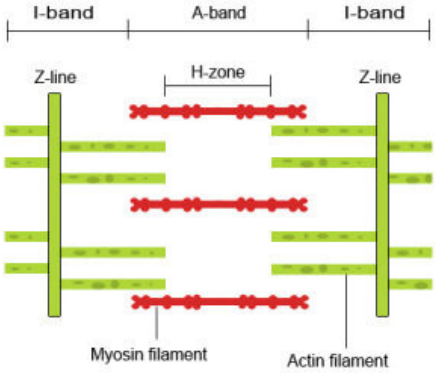
43. Draw a neat labeled diagram of vertebral column.



44. Explain sliding filament theory of muscular contraction.

1. The process of a muscle contracting can be divided into 5 sections:
2. A nervous impulse arrives at the neuromuscular junction, which causes a release of a chemical called Acetylcholine. The presence of Acetylcholine causes the depolarisation of the motor end plate which travels throughout the muscle by the transverse tubules, causing Calcium (Ca+) to be released from the sarcoplasmic reticulum.
3. In the presence of high concentrations of Ca+, the Ca+ binds to Troponin, changing its shape and so moving Tropomyosin from the active site of the Actin. The Myosin filaments can now attach to the Actin, forming a cross-bridge.
4. The breakdown of ATP releases energy which enables the Myosin to pull the Actin filaments inwards and so shortening the muscle. This occurs along the entire length of every myofibril in the muscle cell.
5. The Myosin detaches from the Actin and the cross-bridge is broken when an ATP molecule binds to the Myosin head. When the ATP is then broken down the Myosin head can again attach to an Actin binding site further along the Actin filament and

repeat the 'power stroke'. This repeated pulling of the Actin over the myosin is often known as the ratchet mechanism.



6. This process of muscular contraction can last for as long as there is adequate ATP and Ca+ stores. Once the impulse stops the Ca+ is pumped back to the Sarcoplasmic Reticulum and the Actin returns to its resting position causing the muscle to lengthen and relax.

Stretched Muscle