Unit 19 - Movements In Animals

Class: VIII

Subject: Science

I. Choose the best answer.

1. Which of the following parts of our body help us in movement?

(i) Bones (ii) Skin (iii) Muscles (iv) Organs

Choose the correct answer from the options below.

(a) (i) and (iii) (b) (ii) and (iv) (c) (i) and (iv) (d) (iii) and (ii)

2. Which one of the following organisms lack muscles and skeleton for movement?

(a) Dog **(b) Snail** (c) Earthworm (d) Human being

3. _____ joints are immovable.

(a) Shoulder and arm (b) Knee and joint

(c) Upper jaw and skull (d) Lower jaw and upper jaw

4. Why do underwater divers wear fin-like flippers on their feet ?

(a) To swim easily in water. (b) To look like a fish.

(c) To walk on water surface.

(d) To walk over the bottom of the sea (sea bed).

5 External ear (pinna)is supported by

(a) bone **(b) cartilage** (c) tendon (d) capsule

6. Cockroach moves with the help of its

(a) leg (b) bone (c) muscular foot **(d) whole body**

7. Which one of the following categories of vertebrae are correctly numbered?

(a) Cervical-7 (b) Thoracic-10 (c) Lumbar – 4 (d) Sacral – 4

II. Fill in the blanks.

1. Movement of organisms from place to place is called **locomotion**.

2. **Movement** refers to change in position of the part of an organism,s body.

3. A structure which provides rigid frame work to the body is called **Skeleton**

4. Axil skeleton in human consists of Skull facial bones,sternum,ribs and vertebral column .

5. Appendicular skeleton in human consists of pelvic and Pectoral girdle.

6. The place where two bones meet is termed as joint.

7. Smooth muscle is attached to soft parts of the body like blood vessels, iris, bronchi and the skin

8. Radial muscle makes pupil of eyes wider.

III. State true or false. If false, correct the statement.

1. Skull in humans consists of 22 bones. **True**
2. There are 12 pairs of ribs in human body. **True**
3. Pelvic girdle is a part of axial skeleton. **False**
4. Hinge joint is slightly movable joint. **True**
5. Cardiac muscle is a voluntary muscle. **False**
6. The flexor and extensor muscle of the arm are antagonistic muscles. **True**

IV. Answer very briefly.

1. What is skeleton?

- The skeleton system provides the hard structure or framework to the human body which supports and protects the body.
- It is composed of connective tissues like bones, cartilage, tendons and ligaments.

2. What is cranium?

- Skull is a hard structure made up of small bones. It is formed by 22 bones out of which 8 bones are fixed together to form the cranium and 14 bones fuse to form the face.
- The only bone which has movable joint is the lower jaw. This movable joint is supported by muscles and ligaments

3. Why our backbone is slightly moveable?

- Vertebral column running at the back of the body is also called as spine or the backbone.
- Vertebrae are joined by gliding points which allow the body to be bent back, front or side wards.

4. Differentiate axial and appendicular skeleton.

Axial skeleton:

The axial skeleton consists of the bones along the axis, or central line of the human body and consists of the skull, facial bones, sternum, ribs, and vertebral column.

Appendicular skeleton:

The appendicular skeleton contains the bones in the appendages of the body, as well as the structures that connect the appendages to the axial skeleton. It comprises the shoulder girdle; the arm, wrist, and hand bones; the pelvic girdle; and the leg, ankle, and foot bones.

5. What is ligament?

Ligaments Bands of tough, elastic connective tissue that surround a joint to give support and limit the joint's movement.

6. Define muscle.

Muscles are long bundles of contractile tissue. Each muscle usually has two ends - a fixed end where the muscle originates and a movable end which pulls some other part.

7. Differentiate tendons and ligament.

Tendon:

- They are made of elastic tissue.
- They attach muscle to a bone

Ligament:

- They are short bands of tough fibrous connective tissues.
- They connect one bone to another

V. Answer briefly.

1. Differentiate between the following.

a. Movement and Locomotion. b. Endoskeleton and Exoskleton

c. Pectoral and Pelvic girdle d. Ball and socket Joint and Hinge Joint

e. Voluntary and Involuntary muscle

a) Movement and Locomotion:

Movement:

- Movement is the act of changing the place or position by one or more parts of the body.
- It can either be voluntary or involuntary.
- A movement takes place at the biological level.
- Movement requires energy.

Locomotion:

- Locomotion is the movement of an organism from one place to another.
- It is always voluntary.
- Locomotion takes place at the organism level.
- Locomotion doesn't necessarily require energy.

b) Endoskeleton and Exoskleton:

Exoskeleton:

- It is the skeleton that is found on the exterior layer of the body and it basically originates from embryonic ectoderm or mesoderm.
- Like scales in the fishes, outer hard layer of the tortoise and feathers of the birds it protects and preserves the inner organs.

Endoskeleton:

- It is the skeleton that is found inside the human body and it originates from the mesoderm.
- These are found in almost all vertebrates and form the main body structure.

c) Pectoral and Pelvic girdle:

Pectoral:

- Shoulder bone is formed by collar bone at the front and the shoulder blade at the back.
- The collar bone is supported by breast bone atone end and the shoulder blade at the otherend. The shoulder bone encloses a socket like cavity into which fixes the ball of the upperarm.
- This forms a ball and socket joint. Thisgirdle is also called as pectoral girdle.

Pelvic bone:

- Pelvic bone is also called as pelvic girdle.It is made up of strong bones to balance entireweight of the body.
- Pelvic girdle is formed by five fused vertebrae at the back and form a cavity in the centre while reaching the front part. The thigh bones are attached to either side of the girdle with a ball and socket joint.

d) Ball and socket Joint and hinge Joint:

Ball and socket Joint:

- A ball shaped head of one bone articulates with a cup like socket of j an adjacent bone.
- Movement can occur in three planes. This joint allows the greatest range of movement. Example: Shoulder, Hip

Hinge Joint:

- A cylindrical protrusion of one bone articulates with a trough-shaped depression of an adjacent bone.
- Movement is restricted to one plane. This joint allows bending and straightening only. Example: Elbow Knee Ankle

e) Voluntary and Involuntary muscle:

Voluntary muscle:

- They are striated (Multinucleate muscles and unbranched) muscles.
- They are attached to bones.
- Example: found in arms, legs
- They are used as per our will.

Involuntary muscle:

- They are non – striated (Single muscle, central nucleus) muscles.
- They are attached to soft parts of the body like blood vessels, Iris, Skin etc.
- They are not under our control.

2. What are antagonistic muscles? Give one example.

- Muscles often work in pairs which work against each other. These are called antagonistic pairs.
- The muscles in the upper arm control the bending and straightening of the arm.

- The two muscles, the biceps and triceps are working against each other.
- When the biceps contracts the lower arm is raised and the arm bends.
- In this position the triceps muscle is relaxed.
- To straighten the arm the reverse happens.
- The triceps contracts straightening the arm, while the biceps relaxes.

3. How is the skeleton of a bird well-suited for flying?

- A bird has streamlined body. Its bones are light and strong.
- They are hollow and have air spaces between them.
- The hind limbs of birds are modified as claws, which help them to walk and to perch.
- The breast bones are modified to hold massive flight muscles which help in moving wings up and down.
- Birds have special flight muscles and the forelimbs are modified as wings.
- The wings and tail have long feathers, which help in flying. Birds show two types of flight: gliding and flapping.

4. What are the functions of skeleton in human body?

The skeletal system serves five important functions in the human body:

- It provides structure and shape to the body.
- It supports and surrounds the internal organs of the body.
- Calcium and phosphorus, the two minerals that the body needs for important regulatory functions, are stored inside the bones.
- Red blood cells are produced in the bone marrow.
- The bones of the skeletal system act as levers for muscular action.
- Muscular movement would not be possible without tendons (fibrous cords of tissue that attach muscle to bone) and ligaments (fibrous cords of tissue that attach bone to bone).

VI. Answer in detail.

1. Name the different types of joints? Give one example for each type.

Joint	Examples
Ball and Socket	Shoulder Hip
Hinge	Elbow, Knee, Ankle
Pivot	Spine (Atlas / Axisoint at the top)
Condyloid	Wrist
Gliding	Spine (between the bony processes of the vertebrae)
Saddle	Thumb, shoulder and inner ear.

2. Write about the human axial skeleton, giving suitable labelled diagram.

The axial skeleton consists of the bones along the axis or central line of the human body. It consists of the skull, facial bones sternum, ribs and vertebral column.

Skull:

- It is a hard structure made of 22 bones.
- 8 bones are fixed together to form the cranium and 14 hones fuse to form the face.
- The lower jaw is the only movable bone of the skull.

Vertebral column:

- It is called the backbone and runs of the back of the body.
- It is made of 33 individual bones called vertebrae as follows :
- 7 Cervical vertebrae
- 12 Thoracic vertebrae
- 5 Lumbar vertebrae
- 5 Fused sacral vertebrae
- 4 Fused coccygeal vertebrae
- The hollow tube of the vertebral column contains the spinal cord.
- Vertebrae are joined by gliding points which allow the body to be bent back, front or side – wards.

Function of vertebral column:

- It protects the spinal cord
- It supports the head
- It serves as an attachment for ribs
- Helps in walking, standing erect and posture.
- It is a cone shaped structure in the chest region and made up of 12 pairs of ribs.
- The ribs attached to the vertebral column at the back and the breast bone in the front.
- There are 12 pairs of ribs.

Sternum or Ribcage:

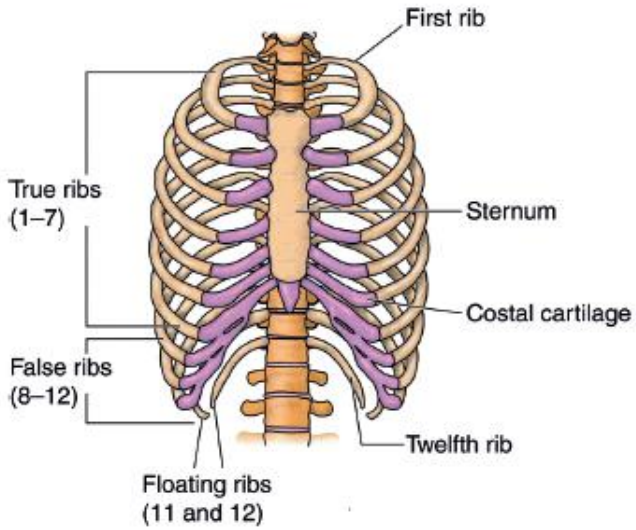


Figure 19.11 Rib cage in human.

- First 10 pairs are attached to breast bone.
- 2 pairs are called free floating ribs and are free in the front.
- Rib cage can contract and expand during breathing.
- It protects the lungs, hearts and a part to the liver.

3. Discuss various types of movements seen in living organisms.

There are three types of movements:

Amoeboid movement:

It is brought about by pseudopodia which are appendages which move with movement of protoplasm within a cell.

Ciliary movement

This movement is brought about by appendages called as cilia which are the hairlike extensions of the epithelium. Both these kinds of movements are seen with cells of the lymphatic system.

Muscular movement

- It is a more complex movement which is brought about by the musculoskeletal system. This type of movement is seen in the higher vertebrates.
- To understand more about the movements brought about by the musculoskeletal system, we need to understand the joints, skeleton andtypes of muscles

Some of the movements in body parts of human are:

- Movement of eyelids.
- Movement of the heart muscles.
- Movement of teeth and jaw.
- Movement of arms and legs.
- Movements of head.
- Movements of neck.

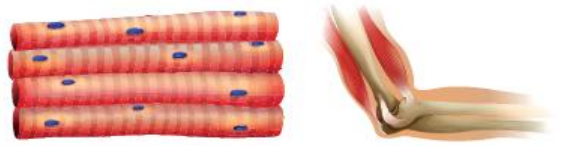
4. What is a streamlined body? How does it help in the movement of animals that fly or swim in water?

- A bird has streamlined body. Its bones are light and strong. They are hollow and have air spaces between them.
- The lower portion of limbs are modified as claws, which help them to walk and to perch.
- The breast bones are modified to hold massive flight muscles which help in moving wings up and down.
- Birds have special flight muscles and the forelimbs are modified as wings.
- The wings and tail have long feathers, which help in flying. Birds show two types of flight: gliding and flapping.
- The body of a fish is streamlined to reduce friction while moving in water.

- They have strong muscles, which help in swimming. When a fish swims its front part curves to one side and the tail part stays in the opposite direction.
- In the next move, the front part curves to the opposite side and the tail part also changes its position to another side. The caudal or tail fin helps in changing direction.

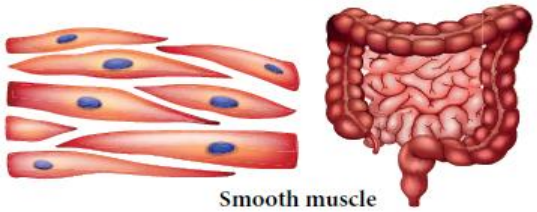
5. Write a short note on different types of muscles.

- Striated or skeletal muscles or voluntary muscles.
- Unstriated or smooth muscles or involuntary muscles.
- Cardiac muscles.



Skeletal muscle

Cardiac muscle



Smooth muscle

Muscle	Location	Characteristics
Striated /Skeletal / Voluntary muscle	Attached to bones. Found in arms, legs, neck.	Multinucleate,3 Unbranched, Voluntary.
Non striated / Smooth / Involuntary muscle	Attached to soft parts of the body like blood vessels, iris, bronchi and the skin.	Single, central Nucleus Involuntary
Cardiac muscle	Heart	Branched, 1 -3 central nuclei Involuntary