

# Chapter – 5

## Body Movements

### **2marks:**

**1.What is the purpose of joints in the human body?**

**Answer:**

Joints facilitate movement and flexibility in the human body, connecting bones and allowing various degrees of motion.

**2.Define a ball and socket joint and provide an example.**

**Answer:**

A ball and socket joint permits movement in multiple directions and is characterized by a rounded end fitting into a hollow socket. Example:  
The hip joint.

**3.How do muscles enable movement in the body?**

**Answer:**

Muscles contract and relax, pulling on bones, which allows movement at the joints they're connected to.

**4.Differentiate between hinge and ball and socket joints.**

**Answer:**

Hinge joints permit movement in one direction (like the elbow),

while ball and socket joints allow movement in multiple directions (like the shoulder or hip).

**5.What is the function of cartilage in the skeletal system?**

**Answer:**

Cartilage provides cushioning between bones, reduces friction at joints, and helps maintain their structure.

**6.Name an animal that crawls and explain its movement.**

**Answer:**

An earthworm crawls by contracting and extending its body segments, using bristles to grip and move on surfaces.

**7.Why can't the elbow joint move backward?**

**Answer:**

The elbow joint is a hinge joint designed to permit movement in only one direction, preventing backward movement for stability.

**5marks:**

**1. Explain the role of joints in the human body and provide examples of different types of joints.**

**Answer:**

Joints play a crucial role in facilitating movement in the human body by connecting bones. There are various types of joints, such as:

**Hinge Joints:** Found in the elbow and knee, these joints allow movement in one direction, like a door hinge.

**Ball and Socket Joints:** Examples include the hip and shoulder joints, enabling a wide range of movements.

**Pivot Joints:** The joint between the atlas and axis vertebrae in the neck allows rotational movement.

**2. Describe the structure and functions of the skeletal system in the human body.**

**Answer:**

The skeletal system comprises bones, cartilage, and joints. It serves several vital functions, including:

**Support:** Bones provide structural support for the body.

**Protection:** The skeleton protects vital organs like the brain (skull) and heart (ribcage).

**Movement:** Joints and muscles working together allow various body movements.

**Blood Cell Formation:** The bone marrow produces red and white blood cells.

**Mineral Storage:** Bones store essential minerals, like calcium and phosphorus.

**3. Discuss the coordination between muscles and bones during body movements.**

**Answer:**

Muscles and bones work in tandem during body movements. When muscles contract, they pull on bones, causing movement. This coordination is essential for:

**Voluntary Movements:** Controlled by conscious decisions, like walking or writing.

**Involuntary Movements:** Unconscious actions, such as heartbeat and digestion, involve muscle and bone coordination.

This synergy ensures precise and coordinated motion, enhancing the body's functionality.

**4. Explain the significance of the rib cage in protecting internal organs and its role in breathing.**

**Answer:**

The rib cage, composed of ribs and the sternum, serves as a protective

shield for internal organs. It safeguards delicate organs like the heart and lungs from external impacts.

In breathing, the rib cage expands and contracts, creating space for lung expansion during inhalation. This vital movement allows air to flow in and out, supporting the respiratory system.

**5. Compare and contrast the skeletal structures of fish and birds, emphasizing their adaptations for movement.**

**Answer:**

Fish and birds exhibit distinct skeletal adaptations for their respective environments and modes of movement.

**Fish Skeletons:** Streamlined bodies with flexible backbones facilitate easy swimming. Fins aid in balance and direction control. Bones are relatively light.

**Bird Skeletons:** Lightweight, hollow bones reduce overall body weight, essential for flight. The sternum is modified for the attachment of flight muscles. Wings provide lift and control.

These adaptations highlight the efficiency of their skeletal structures in their unique habitats.

**6. Elaborate on how muscles work in pairs and their role in body movement. Provide examples.**

**Answer:**

Muscles typically work in pairs, known as antagonistic pairs, to

achieve movement.

**Example 1 (Bicep and Triceps):** When you bend your arm, the bicep contracts (shortens), while the triceps relaxes. To straighten the arm, the triceps contracts, and the bicep relaxes.

**Example 2 (Quadriceps and Hamstrings):** In the leg, the quadriceps and hamstrings work together for activities like walking. The quadriceps extend the leg, while the hamstrings flex it.

This antagonistic muscle action ensures smooth and controlled movements.

**7. Discuss the role of joints and muscles in specific activities, such as playing sports or writing.**

**Answer:**

Engaging in activities like sports or writing requires precise coordination between joints and muscles.

**Sports:** Different types of joints and muscles collaborate for complex movements in sports. For instance, the hip and knee joints, along with leg muscles, play a crucial role in running and jumping.

**Writing:** Fine motor skills involve intricate joint and muscle coordination, such as the wrist, finger joints, and forearm muscles working together for precise handwriting.

Understanding these interactions is essential for enhancing performance in various activities.

**8. Explore the concept of fixed joints and provide examples of their significance in the human body.**

**Answer:**

Fixed joints, also known as immovable joints, play a critical role in the human body where stability and support are paramount.

**Example 1** (Skull Sutures): The joints between the skull bones are fixed, providing protection to the brain.

**Example 2** (Teeth in Jaw): Teeth are anchored in fixed sockets, ensuring stability during chewing and speaking.

These joints contribute to the overall structural integrity of the body.

**9. Investigate the connection between bone structure and function, emphasizing the adaptability of bones.**

**Answer:**

The structure of bones is closely tied to their functions, showcasing remarkable adaptability.

**Example 1** (Long Bones): Long bones, like femur and humerus, provide support and leverage for movement.

**Example 2** (Flat Bones): The flat bones of the skull protect the brain and provide a surface for muscle attachment.

Adaptations in bone structure cater to specific functional needs, reflecting the efficiency of the skeletal system.

**10. Analyze the impact of regular physical activity on bone health and overall well-being.**

**Answer:**

Regular physical activity has profound effects on bone health and general well-being.

**Bone Density:** Weight-bearing exercises increase bone density, reducing the risk of osteoporosis.

**Muscle Strength:** Physical activity enhances muscle strength, supporting joint stability and preventing injuries.

**Overall Well-Being:** Exercise promotes cardiovascular health, mental well-being, and a healthy weight.

These benefits underscore the importance of incorporating physical activity into a life.

**1. Fill in the blanks.**

(a) Joints of the bones help in the \_\_\_\_\_ of the body.

(b) A combination of bones and cartilages forms the \_\_\_\_\_ of the body.

(c) The bones at the elbow are joined by a \_\_\_\_\_ joint.

(d) The contraction of the \_\_\_\_\_ pulls the bones during movement.



(e) Joints of the bones help in the \_\_\_\_\_ of the body.

(f) Cockroaches have an outer \_\_\_\_\_.

(g) The \_\_\_\_\_ bones of the fish are modified as wings in birds.

(h) Earthworms move by alternate extension and contraction of the body using \_\_\_\_\_.

**Answer:**

(a) Joints of the bones help in the movement of the body.

(b) A combination of bones and cartilages forms the skeleton of the body.

(c) The bones at the elbow are joined by a hinge joint.

(d) The contraction of the muscles pulls the bones during movement.

(e) Joints of the bones help in the movement of the body.

(f) Cockroaches have an outer skeleton.

(g) The forelimb bones of the fish are modified as wings in birds.

(h) Earthworms move by alternate extension and contraction of the body using muscles.

**2. Indicate true (T) and false (F) among the following sentences.**

(a) The movement and locomotion of all animals are exactly the same. ( )

(b) The cartilages are harder than bones. ( )

(c) The finger bones do not have joints. ( )

**(d) The forearm has two bones. ( )**

**(e) Cockroaches have an outer skeleton. ( )**

**Solution:**

a) False

b) False

c) False

d) True

e) True

**3. Match the items in Column I with one or more items of Column II.**

**Answer:**

Column I	Column II
Upper jaw	Have fins on the body
Fish	Has an outer skeleton
Ribs	Can fly in the air
Snail	Is an immovable joint
Cockroach	Protect the heart
	Shows very slow movement

	<b>Have a streamlined body</b>
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**Answer:**

<b>Column I</b>	<b>Column II</b>
Upper jaw	Is an immovable joint
Fish	Have fins on the body, have a streamlined body
Ribs	Protect the heart
Snail	Has an outer skeleton and Shows very slow movement
Cockroach	Has an outer skeleton and Can fly in the air

**4. Answer the following.**

- (a) What is a ball and socket joint?
- (b) Which of the skull bones are movable?
- (c) Why can our elbow not move backwards?

**Answer:**

a) The rounded end of one bone fits into the cavity (hollow space) of the other bone. Such a joint allows movements in all directions, which is called a ball and socket joint.

b) Lower jaw

c) Our elbow cannot move backwards because it has hinge joints which only allow back-and forth-movement.

**Multiple choice:**

**1. What is the function of the human skeleton?**

**A) To generate energy**

**B) To provide structure and support**

**C) To produce blood cells**

**D) To regulate body temperature**

**Answer:**

B) To provide structure and support

**2. Which joint allows movements in all directions, like the movement of the hip and shoulder?**

**A) Hinge joint**

**B) Ball and socket joint**

**C) Pivotal joint**

**D) Fixed joint**

**Answer:**

B) Ball and socket joint

**3. What is the outer skeleton of a snail called?**

- A) Exoskeleton**
- B) Endoskeleton**
- C) Shell**
- D) Cartilage**

**Answer:**

- C) Shell

**4. How do fish swim in water?**

- A) By walking on the ground**
- B) By flying in the air**
- C) By forming loops alternately on two sides of the body**
- D) By slithering on the ground**

**Answer:**

- C) By forming loops alternately on two sides of the body

**5. Which activity helps in making the bones strong and prevents osteoporosis?**

- A) Lifting weights**
- B) Sitting for long hours**
- C) Avoiding physical activity**

**D) Slouching**

**Answer:**

A) Lifting weights

**6. What kind of joint allows only a back-and-forth movement, like the elbow?**

**A) Ball and socket joint**

**B) Hinge joint**

**C) Pivotal joint**

**D) Fixed joint**

**Answer:**

B) Hinge joint

**7. How do earthworms move through the soil?**

**A) By walking**

**B) By flying**

**C) By forming loops**

**D) By slithering**

**Answer:**

C) By forming loops

**8. What is the primary purpose of the rib cage in the human body?**

- A) To protect the heart**
- B) To assist in breathing**
- C) To aid digestion**
- D) To support the head**

**Answer:**

- B) To assist in breathing

**9. What helps birds to fly by flapping their wings?**

- A) Heavy bones**
- B) Hollow bones**
- C) Muscular tail**
- D) Fixed wings**

**Answer:**

- B) Hollow bones

**10. What is the purpose of the bristles on the underside of an earthworm?**

- A) To detect food**
- B) To provide insulation**

**C) To grip the ground**

**D) To aid in reproduction**

**Answer:**

C) To grip the ground



**Summary:**

The chapter explores the intricate mechanisms of body movements in animals, focusing on the human skeleton, joints, and various animal adaptations. It emphasizes the crucial role of bones and muscles in facilitating movement, introduces different types of joints, and discusses the diverse locomotion methods of animals like earthworms, snails, cockroaches, fish, and snakes. The skeletal structure, wings, and streamlined bodies of birds, along with the importance of yoga for maintaining health, are also highlighted. The summary underscores the fundamental concepts of the interplay between bones and muscles, showcasing the diversity of movements across the animal kingdom.