Q1. **What is skeleton? How is it useful to us?**

Ans. Skeleton is the bony frame which gives shape to the body. It gives protection to internal organs, helps in locomotion, and produces red blood cells and stores calcium and phosphorus for future use.

Q2. **What is cranium? Why is it made up of small bones joined together instead of single big bone?**

Ans. It is the brain box which encloses the brain, small bones with sutures help in taking the shocks easily and repairing of the broken part becomes easy.

Q3. **Name the parts of a typical vertebra.**

Ans. A typical vertebra has — centrum, vertebral arch, notches and processes, i.e., neural process, superior and inferior articular process and transverse process and vertebral foramen.

Q4. **Why our backbone is slightly movable?**

Ans. There is fibro cartilaginous disc in between the vertebrae of backbone which allows only slight movement.

Q5. **Why some ribs are called true ribs and some are false ribs? What is the difference between them?**

Ans. True ribs attach to the sternum directly, whereas false ribs attach to the previous ribs.

Q6. **How many floating ribs do we have? What is their significance in our body?**

Ans. We have two floating ribs which help in expansion of rib cavity during respiration.

Q7. **Name the following in human skeleton —**

(a) Smallest bone

(b) Longest bone

(c) Strongest bone

(d) Movable skull bone.

Ans. (a) Ear ossicles (b) Femur (c) Enamel of tooth (d) Mandible (lower jaw)

Q8. **What is the difference between metacarpals and metatarsals?**

Ans. Metacarpals are the bones of palm and metatarsals are foot bones.

Q9. **Name the following:**

(i) Parts of the axial skeleton.

(ii) Parts of the appendicular skeleton.

(iii) Type of joint present in the skull.

(iv) Type of joint present between the fore arm and the wrist.

(v) Bones comprising the backbone.

(vi) Bones of pectoral girdle. (vii) Bones of pelvic girdle.

Ans. (i) Skull, backbone, ribs and sternum

(ii) Bones of limbs and limb girdles

(iii) Immovable joint

(iv) Hinge joint

(v) Vertebrae

(vi) Collar bone and scapula

(vii) Ilium, ischium and pubis.

Q10. **Distinguish between the following:**

(i) Movement and Locomotion

(ii) True ribs and floating ribs

(iii) Pectoral girdle and Pelvic girdle (iv) Ball and socket joint and Hinge joint

Ans. (i) Differences between movement and locomotion.

Movement	Locomotion
1. It is a change in position of any part of an organism's body.	1. It refers to the movement of an organism from place to place.
2. It involves the movement of a part or organ of body	2 It involves the movement of the whole body.
3. Examples: Chewing, breathing, blinking, etc.	3. Examples: Walking, running, swimming, etc.

(ii) Differences between true ribs and floating ribs.

True Ribs	Floating Ribs
The first seven pairs of ribs which are directly attached to the sternum are called true ribs.	The last two pairs (eleventh and twelfth) which are not attached to the sternum are called floating ribs

(iii) Differences between pectoral girdle and pelvic girdle.

Pectoral Girdle	Pelvic Girdle
1. It consists of clavicle or collar bone and shoulder bone or scapula.	1. It consists of ilium, ischium and pubis bones.
2. It is attached by muscles and tendons to the thoracic vertebrae.	2. It is firmly connected to the sacrum by strong ligaments.
3. The connection is a loose one acting as a shock absorber to dissipate the upthrust received by the forelimbs.	3. The connection is strong enough to absorb the thrust transmitted up the legs in walking.

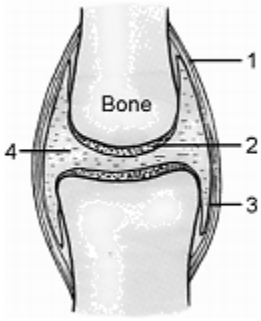
(iv) Differences between ball and socket joint and hinge joint.

Ball and Socket Joint	Hinge Joint
1. In this joint the rounded head of one bone fits into a cup-shaped cavity of other bone.	1. In this joint a pad of flexible cartilage is present between the bones.
2. This allows the movement in all directions.	2. It allows the movement in one direction only, like those of a door
3. It is found in shoulder and hip joint.	3. It is found in between the fore arm and the wrist and between thigh and lower leg.

Q11. **Observe the figure given below and answer the following questions:**

(i) Name the type of joint shown in the figure.

(ii) Name the parts 1, 2, 3 and 4.



Ans. (i) Movable joint.

(ii) 1. Joint capsule

2. Cartilage

3. Synovial membrane

4. Synovial fluid

Q12. **State the functions of skeleton.**

Ans. Functions of Skeleton the general functions of a skeleton are as follows:

1. **Support**: The skeleton provides a rigid framework for the body and helps to maintain the shape of the body. Within the body, organs are attached to, and suspended from the skeleton.
2. **Protection**: The skeleton protects the delicate internal organs of the body. For example, in human the cranium protects the brain and the sense organs of sight, smell and hearing; the vertebral column protects the spinal cord, and the ribs and sternum protect the heart, lungs and large blood vessels.
3. **Locomotion**: The skeleton serves as the basis for the attachment of muscles. Parts of the skeleton act as levers on which the muscles can pull.
4. **Storage**: The skeleton serves as a storehouse of minerals such as calcium and phosphorus.
5. **Formation of Blood Cells:** The bone marrow of long bones forms red blood cells and white blood cells.

Q13. **Describe the structure of a typical vertebra.**

Ans. Typical Vertebra

(i) The main body of the vertebra is called as centrum.

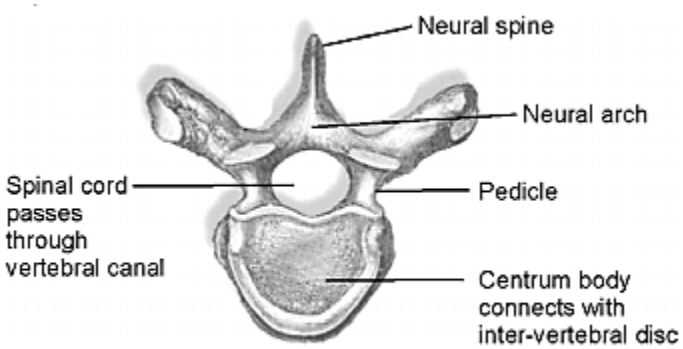
(ii) Over the centrum is the neural arch that provides protection to the spinal cord.

(iii) The neural arch bears a median spinous process or the neural spine to which muscles are attached.

(iv) Two transverse processes project laterally from the base of the neural arch.

(v) The transverse processes provide additional surface for the attachment of muscles.

(vi) The articular facets provide surfaces for articulation with the adjacent vertebrae.

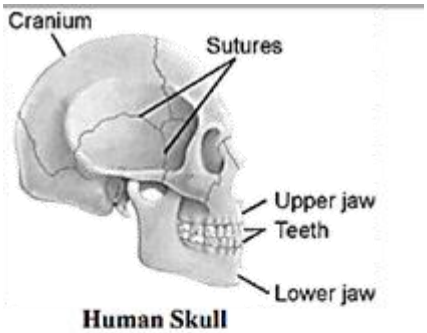


Structure of typical vertebra

Q14. **Write about the human axial skeleton, giving suitable labeled diagrams.**

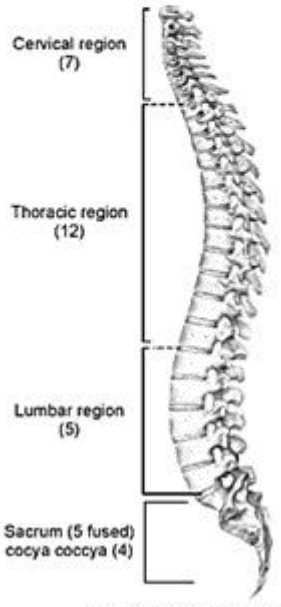
Ans. Human Axial Skeleton The axial skeleton of human consists of the skull, the vertebral column, the ribs and the sternum.

(a) **The Skull:** The skull consisting of 22 bones is a bony box consisting of the cranium and the face. The upper jaw is fused with the cranium and the lower jaw articulates with it. Muscles connect the lower jaw to the skull and the cranium.



Human Skull

(b) **The Vertebral Column:** The vertebral column, commonly known as the backbone, is the main axis of the body. It is made up of a linear series of bones called vertebrae, placed end to end, and separated by intervertebral discs which are cushioning pads of fibrous cartilage. The vertebrae are held together by ligaments. The vertebral column gives protection to the spinal cord. In humans, there are 33 vertebrae in all.



Vertebral column

Q15. **Fill in the blanks.**

(i) Movement of an organism from place to place is called _____.

(ii) _____ refers to a change in position of any part of an organism's body.

(iii) A structure which provides a rigid framework to the body is called _____.

(iv) The axial skeleton in humans consists of _____, _____, _____ and _____.

(v) The appendicular skeleton in humans consists of _____ and _____.

(vi) The place where two bones meet is termed a _____.

(vii) Immovable joint is found in _____.

(viii) Presence of a pad of flexible cartilage allows

Ans. (i) Locomotion, (ii) Movement, (iii) Skeleton, (iv) The skull, vertebral column, sternum and ribs, (v) Pectoral girdle, Pelvic girdle, (vi) Joint, (vii) Skull, (viii) Slight movement.

Q16. **Indicate whether the following statements are True (T) or False (F).**

(i) Skull in humans consists of 22 bones. ( )

(ii) There are 30 vertebrae in the human backbone. ( )

(iii) There are 12 pairs of ribs in human body. ( )

(iv) Pelvic girdle is a part of axial skeleton. ( )

(v) Hinge joint is a slightly movable joint. ( )

Ans. (i) T, (ii) F, (iii) T, (iv) F, (v) T