

Support & Movement

80 Solved MCQs with
Detailed Explanations



- ✓ Correct answers highlighted
- ✓ Explanation under every MCQ
- ✓ 7 topic-wise sections

1

SECTION 1

Introduction and Basics of Support

4 MCQs

1

Why do organisms with larger sizes require a skeletal system?

A To increase their speed

B To keep their body mass as one unit



C To reduce their weight

D To help them fly

Explanation

✓ **Correct Answer: B) To keep their body mass as one unit**

As organisms grow larger, gravity exerts a greater force on them. A skeletal system provides the necessary structural framework to support this increased body mass and maintain the organism's shape, particularly for terrestrial animals.

2

The movement of an animal as a whole from one place to another is called:

A Movement

B Locomotion



C Flexion

D Extension

Explanation

✓ **Correct Answer: B) Locomotion**

While "movement" is a general term for changing position (which can apply to just a part of the body), "locomotion" specifically refers to the whole organism moving from one location to another.

3 Arthropods possess which type of skeleton?

A Endoskeleton

B Hydrostatic skeleton

C Exoskeleton ✓

D Cartilaginous skeleton

Explanation

✓ **Correct Answer: C) Exoskeleton**

Arthropods (like insects and crustaceans) have a hard, external skeleton called an exoskeleton that protects their body and provides support from the outside.

4 The human skeletal system is an example of:

A Exoskeleton

B Endoskeleton ✓

C Hydrostatic skeleton

D Chitinous skeleton

Explanation

✓ **Correct Answer: B) Endoskeleton**

Unlike arthropods, humans and other vertebrates have their skeleton located inside their body, which is known as an endoskeleton.

2

SECTION 2

Bone and Cartilage Structure

11 MCQs

5

What are the cells of cartilage called?

A Osteocytes

B Chondrocytes



C Osteoblasts

D Lacunae

Explanation

✓ **Correct Answer: B) Chondrocytes**

Cartilage cells are specifically named chondrocytes. They reside in small spaces within the cartilage matrix.

6

The fluid-filled space in which a chondrocyte lies is called:

A Matrix

B Canal

C Lacuna



D Marrow

Explanation

✓ **Correct Answer: C) Lacuna**

Lacuna is the term for the small cavity or space that houses cartilage cells (chondrocytes) within the solid matrix.

7 Which of the following is a characteristic of cartilage?

A It contains blood vessels

B It contains nerves

C It lacks blood vessels



D It is harder than bone

Explanation

✓ **Correct Answer: C) It lacks blood vessels**

A key distinguishing feature of cartilage is that blood vessels do not enter its matrix. This is why cartilage heals slower than bone.

8 Which type of cartilage is found at the ends of long bones and in the trachea?

A Elastic cartilage

B Fibrous cartilage

C Hyaline cartilage



D Ossified cartilage

Explanation

✓ **Correct Answer: C) Hyaline cartilage**

Hyaline cartilage is strong yet flexible. It provides smooth surfaces for joint movement and keeps airways like the trachea open.

9 Which cartilage is characterized by a network of elastic fibers and is found in the epiglottis and pinna?

A Hyaline cartilage

B Elastic cartilage



C Fibrous cartilage

D Compact cartilage

Explanation

✓ **Correct Answer: B) Elastic cartilage**

Elastic cartilage contains a dense network of elastic fibers, making it highly flexible, which is essential for structures like the epiglottis and external ear (pinna).

10 Intervertebral discs are made up of which type of cartilage?

A Hyaline

B Elastic

C Fibrous



D Spongy

Explanation

✓ **Correct Answer: C) Fibrous**

Fibrous cartilage is extremely tough and less flexible due to thick collagen fibers. This makes it perfect for withstanding heavy pressure between vertebrae.

11 The mature bone cells are called:

A Chondrocytes

B Osteocytes ✓

C Osteoblasts

D Myocytes

Explanation

✓ **Correct Answer: B) Osteocytes**

Once bone cells mature and become embedded in the bone matrix, they are called osteocytes. They maintain the bone tissue.

12 The hard outer layer of a bone is called:

A Spongy bone

B Compact bone ✓

C Bone marrow

D Cartilage

Explanation

✓ **Correct Answer: B) Compact bone**

Bones have two distinct layers. The dense, hard outer layer that provides structural strength is the compact bone.

13 Which of the following minerals are primarily found in the bone matrix?

A Sodium and Potassium

B Calcium and Phosphate ✓

C Iron and Zinc

D Iodine and Fluorine

Explanation

✓ **Correct Answer: B) Calcium and Phosphate**

The bone matrix is rich in collagen and mineral salts, primarily calcium and phosphate, which give bone its hardness and rigidity.

14 How many bones does a typical human baby have at birth?

A 206

B 300



C 250

D 150

Explanation

✓ **Correct Answer: B) 300**

Babies are born with approximately 300 soft bones. As they grow, some of these bones fuse together, resulting in 206 bones in adulthood.

15 The human skeleton of an adult consists of how many bones?

A 300

B 206



C 210

D 180

Explanation

✓ **Correct Answer: B) 206**

By adulthood, the fusion of certain bones reduces the total count to exactly 206 hard bones.

3

SECTION 3

Divisions of the Human Skeleton

10 MCQs

16

The axial skeleton consists of how many bones?

A 126

B 80



C 206

D 22

Explanation

✓ Correct Answer: B) 80

The axial skeleton forms the central axis of the body and includes the skull, vertebral column, and rib cage, totaling 80 bones.

17

How many bones are present in the appendicular skeleton?

A 80

B 126



C 22

D 54

Explanation

✓ Correct Answer: B) 126

The appendicular skeleton includes the bones of the limbs and girdles, which attach to the axial skeleton, totaling 126 bones.

18 The human skull is composed of how many bones?

A 14

B 8

C 22



D 26

Explanation

✓ **Correct Answer: C) 22**

The skull is made up of 22 bones in total: 8 cranial bones that enclose the brain and 14 facial bones.

19 How many middle ear ossicles are present in the human body?

A 2

B 4

C 6



D 8

Explanation

✓ **Correct Answer: C) 6**

There are 3 tiny bones (malleus, incus, stapes) in each middle ear. Since there are two ears, the total is 6.

20 Which bone is located in the neck and does not articulate with any other bone?

A Sternum

B Hyoid



C Vertebra

D Mandible

Explanation

✓ **Correct Answer: B) Hyoid**

The hyoid is a U-shaped bone in the neck that supports the tongue. It is unique because it does not directly articulate with any other bone.

21 The vertebral column is made up of how many vertebrae?

A 24

B 26



C 30

D 33

Explanation

✓ **Correct Answer: B) 26**

An adult human vertebral column typically consists of 26 vertebrae (24 separate vertebrae, plus the sacrum and coccyx).

22 The chest (thoracic cage) is made of the sternum and how many pairs of ribs?

A 10

B 12



C 14

D 24

Explanation

✓ **Correct Answer: B) 12**

The human chest consists of the sternum (breastbone) and 12 pairs of ribs, totaling 24 individual rib bones.

23 The pectoral girdle is composed of how many bones?

A 2

B 4



C 6

D 8

Explanation

✓ **Correct Answer: B) 4**

The pectoral (shoulder) girdle consists of 4 bones: two clavicles (collarbones) and two scapulae (shoulder blades).

24 How many bones are present in both hands combined?

A 27

B 54



C 14

D 8

Explanation

✓ **Correct Answer: B) 54**

Each hand contains 27 bones (carpals, metacarpals, and phalanges). Therefore, both hands have a total of 54 bones.

25 Which is the longest bone in the human body?

A Tibia

B Humerus

C Femur



D Fibula

Explanation

✓ **Correct Answer: C) Femur**

The femur, or thigh bone, is the longest, heaviest, and strongest bone in the human body.

4

SECTION 4 Joints and their Movements

8 MCQs

26

What is a joint?

A A connection between two muscles

B The location where two or more bones make contact



C The end of a bone

D A type of cartilage

Explanation

✓ **Correct Answer: B) The location where two or more bones make contact**

A joint is the physical point of contact between bones. They are crucial for allowing movement and providing mechanical support.

27

The joints between the skull bones are examples of:

A Slightly movable joints

B Freely movable joints

C Immovable (Fixed) joints



D Ball-and-socket joints

Explanation

✓ **Correct Answer: C) Immovable (Fixed) joints**

Sutures in the skull are fixed joints that allow no movement, providing maximum protection for the brain.

28 Which type of joint is found between the vertebrae?

A Fixed

B Slightly movable



C Hinge

D Ball-and-socket

Explanation

✓ **Correct Answer: B) Slightly movable**

The joints between vertebrae allow for slight movements, which provides flexibility to the spine while maintaining stability.

29 Which joint allows movement in one plane only, like a door?

A Ball-and-socket

B Hinge



C Pivot

D Gliding

Explanation

✓ **Correct Answer: B) Hinge**

Hinge joints, such as the elbow and knee, allow back-and-forth movement in a single plane, similar to the hinges on a door.

30 The shoulder and hip joints are examples of:

A Hinge joints

B Ball-and-socket joints



C Fixed joints

D Slightly movable joints

Explanation

✓ **Correct Answer: B) Ball-and-socket joints**

Ball-and-socket joints feature a spherical bone end fitting into a cup-like socket, allowing movement in all directions (rotation and circumduction).

31 What connects muscles to bones?

A Ligaments

B Tendons ✓

C Cartilage

D Joints

Explanation

✓ **Correct Answer: B) Tendons**

Tendons are tough bands of connective tissue made of collagen that attach muscles to bones, transmitting the force of muscle contraction to the bone.

32 What is the primary function of ligaments?

A Connect muscles to bones

B Connect bones to other bones and prevent dislocation ✓

C Produce blood cells

D Store minerals

Explanation

✓ **Correct Answer: B) Connect bones to other bones and prevent dislocation**

Ligaments are strong but flexible bands that join bone to bone at joints, providing stability and preventing dislocation during movement.

33 What kind of movement does the joint between the vertebral column and the head allow?

A Up and down

B Side to side



C Full rotation

D No movement

Explanation

✓ **Correct Answer: B) Side to side**

The neck joint (specifically the atlas-axis joint) is a pivot joint that allows the head to rotate side to side (e.g., shaking the head "no").

5

SECTION 5 Muscles and Movement

9 MCQs

34 Which of the following is true regarding muscle action?

A Muscles can only push

B Muscles can only pull



C Muscles can both push and pull

D Muscles neither push nor pull

Explanation

✓ **Correct Answer: B) Muscles can only pull**

Skeletal muscles can only contract (shorten) and pull on bones. They cannot actively push a bone back to its original position; instead, they rely on opposing muscles to pull it back.

35 The immovable attachment point of a muscle is called the:

A Insertion

B Origin



C Flexion

D Extension

Explanation

✓ **Correct Answer: B) Origin**

The origin is the fixed attachment point of a muscle, usually on a stationary bone, while the insertion is the attachment point on the bone that moves.

36 The movable attachment point of a muscle is called the:

A Origin

B Insertion



C Joint

D Tendon

Explanation

✓ **Correct Answer: B) Insertion**

When a muscle contracts, it pulls on its insertion point, which is attached to the movable bone, causing movement.

37 Muscles that work in pairs to produce opposite movements are called:

A Synergists

B Antagonists



C Flexors

D Extensors

Explanation

✓ **Correct Answer: B) Antagonists**

Antagonistic muscles work in pairs. When one muscle (the agonist) contracts to produce a movement, the other (the antagonist) relaxes to allow it.

38 The movement that bends a joint is called:

A Extension

B Flexion



C Rotation

D Abduction

Explanation

✓ **Correct Answer: B) Flexion**

Flexion is the action of bending a joint, which decreases the angle between the bones (e.g., bending the elbow).

39 The movement that straightens a joint is called:

A Flexion

B Extension



C Adduction

D Circumduction

Explanation

✓ **Correct Answer: B) Extension**

Extension is the opposite of flexion; it involves straightening a joint, increasing the angle between the bones.

40 Which muscle acts as a flexor for the upper arm?

A Triceps

B Biceps



C Deltoid

D Pectoralis major

Explanation

✓ **Correct Answer: B) Biceps**

The biceps muscle, located on the front of the upper arm, contracts to bend (flex) the elbow joint.

41 Which muscle acts as an extensor for the upper arm?

A Biceps

B Triceps



C Brachialis

D Coracobrachialis

Explanation

✓ **Correct Answer: B) Triceps**

The triceps muscle, located on the back of the upper arm, contracts to straighten (extend) the elbow joint.

42 When the biceps contract, what happens to the triceps?

A It also contracts

B It relaxes



C It remains unchanged

D It pushes the bone

Explanation

✓ **Correct Answer: B) It relaxes**

Biceps and triceps are antagonistic muscles. When the biceps contract to flex the elbow, the triceps must relax to allow the movement to occur.

6

SECTION 6

Disorders of the Skeletal System

7 MCQs

43

What is osteoporosis characterized by?

- ☐ A Inflammation of joints
- ☒ B Decrease in bone density
- ☐ C Accumulation of uric acid
- ☐ D Overgrowth of cartilage



Explanation

✓ **Correct Answer: B) Decrease in bone density**

Osteoporosis is a condition where bones become weak and brittle due to a loss of bone mass (calcium and phosphorus), making them prone to fractures.

44

Osteoporosis is most common in:

- ☐ A Young children
- ☐ B Older men
- ☒ C Older women
- ☐ D Teenagers



Explanation

✓ **Correct Answer: C) Older women**

It is especially common in older women, largely due to a drop in estrogen levels after menopause, which normally helps deposit minerals in bones.

45 Which hormone deficiency is a major cause of osteoporosis in women?

A Progesterone

B Testosterone

C Estrogen



D Growth hormone

Explanation

✓ **Correct Answer: C) Estrogen**

Estrogen plays a vital role in bone health by promoting the deposition of minerals. When its secretion stops after menopause, bone density decreases rapidly.

46 What does the term "arthritis" literally mean?

A Bone weakness

B Inflammation of joints



C Muscle pain

D Cartilage growth

Explanation

✓ **Correct Answer: B) Inflammation of joints**

Arthritis is an umbrella term for conditions characterized by inflammation, pain, and stiffness in the joints.

47 Which type of arthritis is caused by the degeneration of cartilage at joints?

A Rheumatoid arthritis

B Gout

C Osteo-arthritis



D Juvenile arthritis

Explanation

✓ **Correct Answer: C) Osteo-arthritis**

Osteo-arthritis is a degenerative joint disease where the protective cartilage at the ends of bones wears down over time, causing pain and stiffness.

48 Gout is characterized by the accumulation of:

A Calcium crystals

B Uric acid crystals



C Collagen fibers

D Excess blood

Explanation

✓ **Correct Answer: B) Uric acid crystals**

Gout is a painful form of arthritis caused by the buildup of uric acid crystals in the joints, most commonly affecting the big toe.

49 Rheumatoid arthritis involves inflammation of:

A The bone matrix

B The cartilage

C The membranes at joints



D The tendons

Explanation

✓ **Correct Answer: C) The membranes at joints**

Rheumatoid arthritis is an autoimmune disorder where the body's immune system attacks the synovial membranes lining the joints, causing inflammation and pain.

SECTION 7

7

Evolutionary Context and Practical Knowledge

31 MCQs

50 In lower vertebrates, the lower jaw is made up of:

A A single bone

B More than one bone



C Only cartilage

D No bone

Explanation

✓ **Correct Answer: B) More than one bone**

In lower vertebrates, the lower jaw consists of multiple bones, whereas in mammals, it has evolved into a single bone (the mandible).

51 During evolution, mammals incorporated which bones into the middle ear?

A Malleus and Incus



B Stapes and Hyoid

C Femur and Tibia

D Clavicle and Scapula

Explanation



Correct Answer: A) Malleus and Incus

Mammals modified lower jaw bones during evolution, incorporating the malleus and incus into the middle ear to improve hearing.

52 Who is honored for developing modern anatomical studies based on dissection?

A Charles Darwin

B Gregor Mendel

C Andreas Vesalius



D Louis Pasteur

Explanation



Correct Answer: C) Andreas Vesalius

Andreas Vesalius (1514-1564) was a Belgian anatomist whose accurate depictions of the human skeleton and muscles, based on dissections, revolutionized the study of anatomy.

53 Which of the following is an example of a fixed joint?

A Knee joint

B Elbow joint

C Skull sutures



D Hip joint

Explanation

✓ **Correct Answer: C) Skull sutures**

The joints between the bones of the skull are fixed (immovable) to provide maximum protection for the brain.

54 In the chemical test for bone, what happens when a bone is placed in Hydrochloric acid (HCl)?

A It becomes stronger

B It turns blue

C It becomes weak and porous



D It dissolves completely

Explanation

✓ **Correct Answer: C) It becomes weak and porous**

HCl reacts with the calcium salts (such as calcium carbonate and calcium phosphate) in the bone matrix, dissolving the minerals and leaving the bone weak, flexible, and porous.

55 Which type of joint is present in the human knee?

A Ball-and-socket

B Hinge



C Pivot

D Fixed

Explanation

✓ **Correct Answer: B) Hinge**

The knee joint acts like a hinge, allowing movement primarily in one plane (bending and straightening).

56 What is the role of the vertebral column?

A Protects the heart

B Provides main support to body mass



C Produces red blood cells

D Helps in breathing

Explanation

✓ **Correct Answer: B) Provides main support to body mass**

The vertebral column (spine) is the central supporting structure of the body, bearing the weight and allowing upright posture.

57 Why do aquatic animals need less skeletal support than land animals?

A They are smaller in size

B Water provides buoyancy



C They do not move

D They have exoskeletons

Explanation

✓ **Correct Answer: B) Water provides buoyancy**

The buoyant force of water supports the body weight of aquatic animals, reducing the need for a heavy, strong internal skeleton to fight gravity.

58 Which type of joint allows the widest range of motion?

A Hinge

B Slightly movable

C Ball-and-socket



D Fixed

Explanation

✓ **Correct Answer: C) Ball-and-socket**

Ball-and-socket joints (like the shoulder and hip) allow movement in all directions, including rotation, making them the most freely movable joints.

59 Where is hyaline cartilage found in the respiratory system?

A Epiglottis

B Trachea and bronchial tubes



C Intervertebral discs

D Pinna

Explanation



Correct Answer: B) Trachea and bronchial tubes

Hyaline cartilage provides flexible support to keep the airways (trachea, larynx, bronchi) open.

60 What is the name of the chest bone?

A Sternum



B Clavicle

C Scapula

D Rib

Explanation



Correct Answer: A) Sternum

The sternum, or breastbone, is the flat bone located in the center of the chest, connecting to the ribs via cartilage.

61 How many bones are present in the pelvic girdle?

A 2



B 4

C 6

D 8

Explanation

✓ **Correct Answer: A) 2**

The pelvic girdle (hips) is made up of two hip bones (os coxae).

62 Which of the following is a connective tissue that contains tightly packed collagen fibers?

A Blood

B Tendons



C Bone marrow

D Nervous tissue

Explanation

✓ **Correct Answer: B) Tendons**

Tendons and ligaments are dense connective tissues characterized by tightly packed collagen fibers, giving them high tensile strength.

63 The movement of body parts, like bending an arm, is termed:

A Locomotion

B Movement



C Both A and B

D Neither A nor B

Explanation

✓ **Correct Answer: B) Movement**

"Movement" is a general term for any change in position of a body part, while "locomotion" refers specifically to the whole organism moving from place to place.

64 What is the function of the rib cage?

A Produce blood cells

B Protect internal organs like the heart and lungs



C Help in digestion

D Support the head

Explanation

✓ **Correct Answer: B) Protect internal organs like the heart and lungs**

The ribs form a protective cage around vital organs in the thorax, such as the heart and lungs.

65 What kind of tissue is bone?

A Epithelial tissue

B Connective tissue



C Muscular tissue

D Nervous tissue

Explanation

✓ **Correct Answer: B) Connective tissue**

Bone is a specialized form of connective tissue characterized by a hard matrix containing collagen and mineral salts.

66 How many bones are there in one human foot?

A 26



B 27

C 14

D 52

Explanation

✓ **Correct Answer: A) 26**

Each human foot contains 26 bones (tarsals, metatarsals, and phalanges). Both feet together have 52 bones.

67 Which part of the bone contains blood vessels and bone marrow?

A Compact bone

B Spongy bone



C Periosteum

D Cartilage

Explanation

✓ **Correct Answer: B) Spongy bone**

The interior of the bone is spongy (cancellous) and contains blood vessels and bone marrow, where blood cells are produced.

68 The lower jaw in mammals is made of:

A Multiple bones

B A single bone



C Only cartilage

D Two bones

Explanation

✓ **Correct Answer: B) A single bone**

During evolution, mammals modified the lower jaw to consist of a single bone (the mandible), making it stronger.

69 What is the function of the pectoral girdle?

A Attach legs to the body

B Attach arms to the body ✓

C Protect the heart

D Support the head

Explanation

✓ **Correct Answer: B) Attach arms to the body**

The pectoral (shoulder) girdle connects the upper limbs (arms) to the axial skeleton.

70 The study of the structure of the human body is called:

A Physiology

B Anatomy ✓

C Histology

D Cytology

Explanation

✓ **Correct Answer: B) Anatomy**

Anatomy is the branch of biology concerned with the study of the structure of organisms and their parts. (Vesalius is known as the father of modern anatomy).

71 Which of the following joints is slightly movable?

A Skull sutures

B Vertebral joints ✓

C Shoulder joint

D Knee joint

Explanation

✓ **Correct Answer: B) Vertebral joints**

The joints between vertebrae are slightly movable, providing flexibility and shock absorption for the spine.

72 What is the name of the process where bone cells break down bone tissue?

A Ossification

B Resorption

C Calcification

D Flexion

Explanation

✓ **Correct Answer: B) Resorption**

Bone resorption is the process by which osteoclasts break down bone tissue and release minerals, a process that increases in osteoporosis.

73 The inflammation of the membranes at joints is a characteristic of:

A Osteo-arthritis

B Rheumatoid arthritis

C Gout

D Osteoporosis

Explanation

✓ **Correct Answer: B) Rheumatoid arthritis**

Rheumatoid arthritis specifically targets the synovial membranes, causing chronic inflammation, whereas osteo-arthritis is primarily wear-and-tear of cartilage.

74 Which mineral is essential for muscle contraction and bone health?

A Iron

B Calcium

C Sodium

D Potassium

Explanation

✓ **Correct Answer: B) Calcium**

Calcium is a critical mineral stored in bones. It is essential for bone rigidity, blood clotting, and muscle contraction.

75 What is the name of the space that contains osteocytes in bone?

A Lacuna



B Matrix

C Canal

D Marrow

Explanation

✓ **Correct Answer: A) Lacuna**

Just like chondrocytes in cartilage, mature bone cells (osteocytes) reside in small spaces called lacunae within the bone matrix.

76 Which structure attaches a muscle to a bone?

A Ligament

B Tendon



C Cartilage

D Joint capsule

Explanation

✓ **Correct Answer: B) Tendon**

Tendons are fibrous connective tissues that attach muscles to bones, allowing the muscle's pulling force to move the skeleton.

77 The condition characterized by the accumulation of uric acid crystals in joints is:

A Osteoporosis

B Osteo-arthritis

C Gout



D Rheumatoid arthritis

Explanation

✓ **Correct Answer: C) Gout**

Gout is a metabolic disorder where uric acid crystallizes in joints, causing severe pain and inflammation, often starting in the big toe.

78 Which of the following is a function of the skeletal system?

A Production of hormones

B Protection, support, and movement



C Digestion of food

D Transportation of oxygen

Explanation

✓ **Correct Answer: B) Protection, support, and movement**

The skeletal system provides a rigid framework (support), protects vital organs (protection), and works with muscles to facilitate movement.

79 In an antagonistic muscle pair, when the flexor contracts, the extensor:

A Contracts

B Relaxes



C Pushes

D Remains rigid

Explanation

✓ **Correct Answer: B) Relaxes**

Antagonistic muscles work in opposition. For a joint to bend (flexion), the flexor contracts while the extensor must relax to allow the movement.

80 The human hand is made up of how many bones?

A 26

B 27



C 28

D 30

Explanation

✓ **Correct Answer: B) 27**

Each hand consists of 27 bones: 8 carpals (wrist), 5 metacarpals (palm), and 14 phalanges (fingers).



Well Done!

You have completed Chapter 13:
Support and Movement

80

Solved MCQs

7

Sections

100%

Explained

Revise these MCQs again and again — repeated practice is the key to scoring top marks in your Biology exam.

KEEP LEARNING WITH [scholareye.xyz](https://www.scholareye.xyz)

More solved MCQs and study material
await you at www.scholareye.xyz

www.scholareye.xyz

Study smart. Score high.