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Biology Grade 12 — Chapter 7

Support and Movement

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Independent practice MCQs from the supplied Class 12 Biology notes pack. Total: 50 questions.

A. Important / Main Topics

1. The study of bones and cartilage is called:

(A) Osteology
(B) Myology
(C) Arthrology
(D) Neurology

Correct Answer: A

Explanation: The study of bones and cartilage is called osteology.

2. The terminal broad parts of a bone are called the:

(A) Diaphysis
(B) Epiphysis
(C) Periosteum
(D) Endosteum

Correct Answer: B

Explanation: The terminal broad parts are called epiphysis.

3. The middle part along the length of a bone is called the:

(A) Epiphysis
(B) Periosteum
(C) Diaphysis
(D) Endosteum

Correct Answer: C

Explanation: The middle part along the length of bone is called diaphysis or shaft.

4. Bone-forming cells are called:

(A) Osteoclasts
(B) Osteocytes
(C) Chondrocytes
(D) Osteoblasts

Correct Answer: D

Explanation: Osteoblasts are bone forming cells that synthesize and secrete unmineralized ground substance.

5. Bone-destroying cells are called:

(A) Osteoclasts
(B) Osteoblasts
(C) Osteocytes
(D) Chondrocytes

Correct Answer: A

Explanation: Osteoclasts are bone destroying cells that perform bone resorption.

6. The living cells of cartilage are called:

(A) Osteocytes
(B) Chondrocytes
(C) Osteoblasts
(D) Osteoclasts

Correct Answer: B

Explanation: The living cells of cartilage are called chondrocytes.

7. How many bones are there in the human skeleton?

(A) 106
(B) 306
(C) 206
(D) 406

Correct Answer: C

Explanation: 206 — this correctly answers the question.

8. The axial skeleton includes:

(A) Pectoral girdle and pelvic girdle
(B) Forelimbs and hind limbs
(C) Arms and legs
(D) Skull, vertebral column, and rib cage

Correct Answer: D

Explanation: The axial skeleton includes Skull, vertebral column, and rib cage.

9. The appendicular skeleton includes:

(A) Pectoral girdle, pelvic girdle, forelimbs, and hind limbs
(B) Skull and vertebral column
(C) Rib cage and sternum
(D) Cranium and facial bones

Correct Answer: A

Explanation: The appendicular skeleton includes Pectoral girdle, pelvic girdle, forelimbs, and hind limbs.

10. How many vertebrae are in the human vertebral column?

(A) 26
(B) 33
(C) 40
(D) 45

Correct Answer: B

Explanation: 33 — this correctly answers the question.

11. How many pairs of ribs are in the human rib cage?

(A) 10
(B) 14
(C) 12
(D) 16

Correct Answer: C

Explanation: 12 — this correctly answers the question.

12. A joint is a place where:

(A) Muscles attach to bones
(B) Bones are formed
(C) Blood vessels enter bones
(D) Two bones or bone and cartilage come together

Correct Answer: D

Explanation: A joint or articulation is a place where two bones or bone and cartilage come together.

13. The scientific study of joints is called:

(A) Arthrology
(B) Osteology
(C) Myology
(D) Neurology

Correct Answer: A

Explanation: The scientific study of the structure and function of joints is called arthrology.

14. Which type of joint is immoveable?

(A) Cartilaginous joint
(B) Fibrous joint
(C) Synovial joint
(D) Hinge joint

Correct Answer: B

Explanation: Fibrous joints are immoveable joints.

15. Which type of joint is freely moveable?

(A) Fibrous joint
(B) Cartilaginous joint
(C) Synovial joint
(D) Suture

Correct Answer: C

Explanation: Synovial joints are freely moveable joints.

16. What is the function of osteoblasts?

(A) Bone resorption
(B) Cartilage formation
(C) Blood cell production
(D) Bone formation

Correct Answer: D

Explanation: Osteoblasts are bone forming cells that synthesize and secrete unmineralized ground substance.

17. What is the function of osteoclasts?

(A) Bone resorption
(B) Bone formation
(C) Cartilage formation
(D) Blood cell production

Correct Answer: A

Explanation: Bone resorption — this correctly answers the question.

18. What is the function of osteocytes?

(A) Bone formation
(B) Maintain healthy bone tissue
(C) Bone resorption
(D) Blood cell production

Correct Answer: B

Explanation: Maintain healthy bone tissue — this correctly answers the question.

19. What is the function of cartilage?

(A) Produces blood cells
(B) Stores fat
(C) Provides flexible support
(D) Produces hormones

Correct Answer: C

Explanation: Cartilage is more flexible than bone and provides flexible support.

20. Which type of cartilage is found at the ends of long bones?

(A) Fibrocartilage
(B) Elastic cartilage
(C) Calcified cartilage
(D) Hyaline cartilage

Correct Answer: D

Explanation: Hyaline cartilage is found at the ends of long bones.

21. Which type of cartilage is found in the disks between vertebrae?

(A) Fibrocartilage
(B) Hyaline cartilage
(C) Elastic cartilage
(D) Calcified cartilage

Correct Answer: A

Explanation: Fibrocartilage is found in the disks located between the vertebrae.

22. Which type of cartilage is found in the ear flaps?

(A) Hyaline cartilage
(B) Elastic cartilage
(C) Fibrocartilage
(D) Calcified cartilage

Correct Answer: B

Explanation: Elastic cartilage is found in the ear flaps and epiglottis.

23. What is the function of synovial fluid?

(A) To produce blood cells
(B) To store fat
(C) To lubricate the joint
(D) To produce hormones

Correct Answer: C

Explanation: Synovial fluid is secreted by the synovial membrane and lubricates the joint.

24. Which of the following is a hinge joint?

(A) Shoulder
(B) Hip
(C) Neck
(D) Elbow

Correct Answer: D

Explanation: Elbow — this correctly answers the question.

25. Which of the following is a ball-and-socket joint?

(A) Shoulder
(B) Elbow
(C) Knee
(D) Neck

Correct Answer: A

Explanation: Shoulder — this correctly answers the question.

B. Less Important / Secondary Topics

26. What is the function of the vertebral column?

(A) Supports the body and protects the spinal cord
(B) Protects the brain
(C) Produces blood cells
(D) Stores fat

Correct Answer: A

Explanation: Supports the body and protects the spinal cord — this correctly answers the question.

27. What is the function of the rib cage?

(A) Produces blood cells
(B) Protects the heart and lungs
(C) Stores fat

(D) Produces hormones

Correct Answer: B

Explanation: The rib cage provides support for a semi-vacuum chamber called chest cavity and protects the heart and lungs.

28. What is a slipped disc?

(A) Fracture of vertebra
(B) Inflammation of joint
(C) Herniation of intervertebral disc
(D) Curvature of spine

Correct Answer: C

Explanation: Herniation of intervertebral disc — this correctly answers the question.

29. What is spondylosis?

(A) Herniation of disc
(B) Inflammation of joint
(C) Curvature of spine
(D) Immobility and fusion of vertebral joint

Correct Answer: D

Explanation: Spondylosis is the immobility and fusion of vertebral joint.

30. What is sciatica?

(A) Pain in the leg due to pressure on sciatic nerve
(B) Inflammation of joint
(C) Curvature of spine
(D) Bone fracture

Correct Answer: A

Explanation: Sciatica refers to pain, weakness, numbness, or tingling in the leg caused by injury to or pressure on the sciatic nerve.

31. What is arthritis?

(A) Bone fracture
(B) Inflammation of joints
(C) Muscle cramp
(D) Curvature of spine

Correct Answer: B

Explanation: Arthritis is the inflammation of joints.

32. What is osteoporosis?

(A) Inflammation of joints
(B) Muscle cramp
(C) Reduced bone mass and increased risk of fracture
(D) Curvature of spine

Correct Answer: C

Explanation: Osteoporosis is a common disease characterised by reduced bone mass and an increased risk of fracture.

33. What is a simple fracture?

(A) Bone ends penetrate the skin
(B) Fracture damages adjacent organs
(C) Bone is crushed
(D) Skin is intact

Correct Answer: D

Explanation: Simple fracture or closed fractures are those in which the skin is intact.

34. What is a compound fracture?

(A) Bone ends penetrate the skin
(B) Skin is intact
(C) Fracture damages adjacent organs
(D) Bone is crushed

Correct Answer: A

Explanation: If the bone ends penetrate the skin and form a wound are called compound fracture or open fracture.

35. What is the first step in bone repair?

(A) Fibrocartilaginous callus formation
(B) Haematoma formation
(C) Bony callus formation
(D) Bone remodelling

Correct Answer: B

Explanation: The first step in bone repair is haematoma or clot formation.

36. A patient has a condition that causes decreased bone mass. Which of the following is the most likely diagnosis?

(A) Arthritis
(B) Slipped disc
(C) Osteoporosis
(D) Sciatica

Correct Answer: C

Explanation: Osteoporosis is characterized by reduced bone mass and an increased risk of fracture.

37. A patient has a herniated disc pressing on the spinal nerve. Which of the following is the most likely consequence?

(A) Improved nerve function
(B) Increased bone mass
(C) Decreased muscle tone
(D) Severe pain

Correct Answer: D

Explanation: Severe pain — this correctly answers the question.

38. A patient has a condition that causes immobility and fusion of vertebral joint. Which of the following is the most likely diagnosis?

(A) Spondylosis
(B) Sciatica
(C) Arthritis
(D) Osteoporosis

Correct Answer: A

Explanation: Spondylosis is the immobility and fusion of vertebral joint.

39. A patient has a condition that causes inflammation of the synovial membrane due to a faulty immune system. Which of the following is the most likely diagnosis?

(A) Osteoarthritis
(B) Rheumatoid arthritis
(C) Gouty arthritis
(D) Osteoporosis

Correct Answer: B

Explanation: Rheumatoid arthritis is the result of an autoimmune disorder in which synovial membrane becomes inflamed due to faulty immune system.

40. A patient has a condition that causes uric acid crystals to deposit in the joints. Which of the following is the most likely diagnosis?

(A) Osteoarthritis

(B) Rheumatoid arthritis
(C) Gouty arthritis
(D) Osteoporosis

Correct Answer: C

Explanation: Gouty arthritis results from a metabolic disorder in which an abnormal amount of uric acid is retained in the blood and sodium urate crystals are deposited in the joints.

41. A patient has a simple fracture. Which of the following is the correct sequence of bone repair?

(A) Fibrocartilaginous callus → haematoma → bony callus → bone remodelling
(B) Bony callus → haematoma → fibrocartilaginous callus → bone remodelling
(C) Bone remodelling → haematoma → fibrocartilaginous callus → bony callus
(D) Haematoma → fibrocartilaginous callus → bony callus → bone remodelling

Correct Answer: D

Explanation: Haematoma → fibrocartilaginous callus → bony callus → bone remodelling — this correctly answers the question.

42. A patient has a dislocated joint. Which of the following is the most appropriate first aid?

(A) Immobilize the joint
(B) Manipulate the joint
(C) Apply heat
(D) Massage the joint

Correct Answer: A

Explanation: First aid for dislocation includes immobilizing the fractured bone or dislocated joint but do not attempt to manipulate, pull or re-align the injured joint.

43. A patient has a sprain. Which of the following is the most appropriate treatment?

(A) Surgery
(B) Rest, icing, and physical therapy
(C) Manipulation
(D) Heat application

Correct Answer: B

Explanation: Sprains can usually be treated conservatively with treatments such as icing and physical therapy.

44. Which of the following correctly describes the sliding filament model of muscle contraction?

(A) Thick myofilaments slide past thin myofilaments
(B) Myofilaments shorten
(C) Thin myofilaments slide past thick myofilaments
(D) Myofilaments lengthen

Correct Answer: C

Explanation: The sliding filament theory of contraction states that during contraction the thin myofilaments slide past the thick ones so that they overlap to a greater degree.

45. Which of the following correctly describes the role of calcium in muscle contraction?

(A) It binds to myosin and displaces actin
(B) It breaks down acetylcholine
(C) It produces ATP
(D) It binds to troponin and displaces tropomyosin

Correct Answer: D

Explanation: When calcium ions bind with the troponin molecules they cause them to move slightly, displacing the tropomyosin and exposing the binding sites for the myosin head.

46. Which of the following correctly describes the role of ATP in muscle contraction?

(A) It breaks cross bridges
(B) It forms cross bridges
(C) It binds to troponin
(D) It displaces tropomyosin

Correct Answer: A

Explanation: Once the myosin head has become attached to the actin filament, ATP is hydrolysed and the crossed bridges are broken down.

47. Which of the following correctly describes muscle fatigue?

(A) Increased ability to contract
(B) Loss of ability to contract
(C) Muscle lengthening
(D) Muscle relaxation

Correct Answer: B

Explanation: When the muscles lose the ability to contract, the physiological state of muscles is called muscle fatigue.

48. Which of the following correctly describes a cramp?

(A) Loss of ability to contract
(B) Continuous muscle contraction due to calcium imbalance
(C) Tetanic contraction of entire muscle
(D) Muscle lengthening

Correct Answer: C

Explanation: Cramp is also known as tetanic contraction of entire muscle.

49. Which of the following correctly describes tetany?

(A) Tetanic contraction of entire muscle
(B) Loss of ability to contract
(C) Muscle lengthening
(D) Continuous muscle contraction and convulsion due to calcium imbalance

Correct Answer: D

Explanation: In tetany the body shakes from continuous muscle contraction and convulsion occur due to calcium imbalance.

50. Which of the following correctly distinguishes tetany from tetanus?

(A) Tetany is caused by electrolyte imbalance; tetanus is caused by bacterial infection
(B) Tetany is caused by bacterial infection; tetanus is caused by electrolyte imbalance
(C) Both are caused by bacterial infection
(D) Both are caused by electrolyte imbalance

Correct Answer: A

Explanation: Tetany is caused by electrolyte imbalance (e.g., low calcium), while tetanus is caused by bacterial infection (Clostridium tetani).