

Test paper: Locomotion and Movement

1. The contractile protein of skeletal muscle involving ATPase activity is

- a) troponin b) tropomyosin c) myosin d) α -actinin

2. In human body, which one of the following is anatomically

- a) Collar bones – 3 pairs b) Salivary glands – 1 pair c) Cranial nerves – 10 pairs d) Floating ribs – 2 pairs

3. Which one of the following is the correct matching of three items and their grouping category?

- a) Ilium, ischium, pubis – Coxal bones of pelvic girdle
b) Actin, myosin, rhodopsin – Muscle proteins
c) Cytosine, racil, thiamine – Pyrimidines
d) Malleus, incus, cochlea – Ear ossicles

4. Which one of the following is the correct description of a certain part of a normal human skeleton?

- a) Parietal bone and the temporal bone of the skull are joined fibrous joint
b) First vertebra is axis which articulates with the occipital condyles
c) 9th and 10th pairs of ribs are called the floating ribs
d) Glenoid cavity is a depression to which the thigh bone articulates

5. The type of muscle present in our

- a) heart is involuntary and unstriated smooth muscle b) intestine is striated and involuntary
c) thigh is striated and voluntary d) upper arm is smooth muscle and fusiform in shape

6. Three of the following pairs of the human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the non-matching pair.

- a) Sternum and ribs – Axial skeleton b) Clavicle and glenoid cavity – Pelvic girdle
c) Humerus and ulna – Appendicular skeleton d) Malleus and stapes – Ear ossicles

7. Select the correct statement regarding the specific disorder of muscular or skeletal system

- a) Muscular dystrophy – Age related shortening of muscles
b) Osteoporosis – Decrease in bone mass and higher chances of fractures with advancing age
c) Myasthenia gravis – Autoimmune disorder which inhibits sliding of myosin filaments
d) Gout – Inflammation of joints due to extra deposition of calcium

8. Which one of the following pairs of chemical substances is correctly categorized?

- a) Calcitonin and thymosin – thyroid hormones
b) Pepsin and prolactin – two digestive enzymes secreted in stomach
c) Troponin and myosin – complex proteins in striated muscles
d) Secretin and rhodopsin – polypeptide hormone

9. Select the correct statement with respect to locomotion in humans

- a) The vertebral column has 10 thoracic vertebrae b) The joint between adjacent vertebrae is a fibrous joint
c) A decreased level of progesterone causes osteoporosis in old people
d) Accumulation of uric acid crystals in joints causes their inflammation

10. The characteristic and an example of a synovial joint in human is

- a) Fluid filled synovial cavity between two bones – Joint between atlas and axis
b) Lymph filled between two bones, limited movement – Gliding joint between carpals
c) Fluid cartilage between two bones, limited movements – Knee joint
d) Fluid filled between two joints, provides cushion – Skull bones

11. The H-zone in the skeletal muscle fibre is due to

- a) the central gap between actin filaments extending through myosin filaments in the A-band
b) extension of myosin filaments in the central portion of the A-band
c) the absence of myofibrils in the central portion of A-band
d) the central gap between myosin filaments in the A-band

12. Select the correct matching of the type of the joint with the example in human skeletal system

- a) Cartilaginous joint – between frontal and parietal
b) Pivot joint – between third and fourth cervical vertebrae
c) Hinge joint – between humerus and pectoral girdle
d) Gliding joint – between carpals

13. Stimulation of a muscle fibre by a motor neuron occurs at

- a) the neuromuscular junction b) the transverse tubules c) the myofibril d) the sarcoplasmic reticulum

14. Sliding filament theory can be best explained as

- a) actin and myosin filaments do not shorten but rather slide past each other
- b) when myofibrils slide past each other, myosin filaments shorten while actin filaments do not shorten
- c) when myofibrils slide past each other actin filaments shorten while myosin filaments do not shorten
- d) actin and myosin filaments shorten and slide past each other

15. Glenoid cavity articulates

- a) clavicle with scapula
- b) humerus with scapula
- c) clavicle with acromion
- d) scapula with acromion

16. Which of the following is not a function of the skeletal system?

- a) Production of body heat
- b) Locomotion
- c) Production of erythrocytes
- d) Storage of mineral

17. Which of the following joints would allow no movements?

- a) Synovial joint
- b) Ball and Socket joint
- c) Fibrous joint
- d) Cartilaginous joint

18. Radius is a bone found in

- a) arms
- b) legs
- c) pelvic girdle
- d) None of the above

19. The correct order of vertebrae is

- a) cervical, thoracic, lumbar, sacral
- b) thoracic, lumbar, cervical, sacral
- c) sacral, cervical, lumbar, thoracic
- d) lumbar, thoracic, sacral, cervical

20. The types of vertebrae in the suborder – Ophidia is

- a) acoelous
- b) procoelous
- c) heterocoelous
- d) amphicoelous

21. Statements about the mechanism of muscle contraction are given below

- I. Acetylcholine is released when the neural signal reaches the motor end plate
- II. Muscle contraction is initiated by a signal sent by CNS via sensory neuron
- III. During muscle contraction isotropic band gets elongated
- IV. Repeated activation of the muscles can lead to lactic acid accumulation. **Identify the correct statements**

- a) I and IV
- b) I and III
- c) I, II and III
- d) I and II

22. Actin binding sites are located on

- a) troponin
- b) tropomyosin
- c) meromyosin
- d) All of these

23. Scapula is a large triangular flat bone situated in the dorsal part of the thorax between the

- a) second and fifth ribs
- b) second and seventh ribs
- c) third and sixth ribs
- d) third and eighth ribs

24. The coxal of the pelvic girdle is formed by the fusion of

- a) ilium, ischium and pubis
- b) scapula and clavicle
- c) ilium and scapula
- d) ilium, scapula and ischium

25. Chemical ions responsible for muscle contraction are

- a) Ca^{2+} and K^+
- b) Na^+ and K^+
- c) Na^+ and Ca^{2+}
- d) Ca^{2+} and Mg^{2+}

26. Volkmann's canal occurs in

- a) bone
- b) cartilage
- c) liver
- d) internal ear

27. The joint of radio-ulna with the upper arm is

- a) hinge joint
- b) pivot joint
- c) socket joint
- d) none of these

28. The clavicle articulates with _____ of scapula

- a) acromion process
- b) glenoid cavity
- c) acetabulum cavity
- d) ball and socket joint

29. The sensation of fatigue in the muscles after prolonged strenuous physical work, is caused by

- a) a decrease in the supply of oxygen
- b) minor wear and tear of muscle fibres
- c) the depletion of glucose
- d) the accumulation of lactic acid

30. Which of the following option shows correct order of some stages of muscle contraction from the beginning to the end of the process?

- a) Stimuli → Neurotransmitter secretion → Release of Ca^{2+} → Cross bridges formation → Excitation of T-system → Sliding of actin filaments
- b) Stimuli → Neurotransmitter secretion → Excitation of T-system → Release of Ca^{2+} → Cross bridges formation → Sliding of actin filaments → 'H' band diminishes
- c) Stimuli → Excitation of T-system → Neurotransmitter secretion → Cross bridges formation → Sliding of actin filaments → 'H' band diminishes

d) Stimuli → Neurotransmitter secretion → Cross bridges formation → Excitation of T-system → Sliding of actin filaments

31. What is the location of troponin in the process of muscle contraction?

- a) Attached to myosin filament
b) Attached to tropomyosin
c) Attached to myosin cross bridge
d) Attached to T-tubule

32. Elbow joint is an example of

- a) pivot joint b) hinge joint c) gliding joint d) ball and socket joint

33. Pick out the correct match

- a) Sternum - 14 b) Pelvis - 3 c) Ribs - 20 d) Face - 5

34. A cricket player is fast chasing a ball in the field, which one of the following groups of bones are directly contributing in this movement?

- a) Femur, malleus, tibia, metatarsals
b) Pelvis, ulna, patella, tarsals
c) Sternum, femur, tibia, fibula
d) Tarsals, femur, metatarsals, tibia

35. Pectoral girdle constitute

- a) scapula and clavicle b) radius and ulna c) ilium and ischium d) maxilla and mandible

36. Which one of the following item gives its correct total number?

- a) floating ribs in humans - 4
b) Amino acids found in proteins - 16
c) Types of diabetes - 3
d) Cervical vertebrae in humans - 8

37. Muscle which bend the joint is

- a) flexor b) extensor c) involution d) twitch

38. Acetabulum is a concave surface of

- a) pelvis b) pectoral c) foramen magnum d) foramen monro

39. Basic unit of muscle contraction is

- a) collagen b) sarcomere c) bands d) myofibrils

40. Sigmoid notch is present in

- a) femur b) radio-ulna c) tibio-fibula d) humerus

41. Neural canal is present in

- a) humerus b) tibio-fibula c) vertebral column d) cranial bones

42. Total number of bones in the hind limb of a man

- a) 14 b) 21 c) 24 d) 30

43. The joint between atlas and axis is called?

- a) pivot joint b) hinge joint c) saddle joint d) angular joint

44. Gout is a disease that affects the joints and leads to arthritis. It is associated with an abnormality of

- a) pyrimidine metabolism b) purine metabolism c) fat metabolism d) protein metabolism

45. In the resting muscle fibre, tropomyosin partially covers

- a) calcium binding sites on troponin
b) actin binding sites on myosin
c) myosin binding sites on actin
d) calcium binding sites on actin

46. In human beings, the cranium is formed by

- a) eight bones of which two are paired
b) fourteen bones of which six are paired
c) ten bones of which two are paired
d) twelve bones of which four are paired

47. An acromian process is characteristically found in the

- a) pelvic girdle of mammals b) skull of frog c) pectoral girdle of mammals d) sperm of mammals

48. Read the statements regarding muscle proteins

- I. Actin is a thin filament and is made up of two F-actins.
II. The complex protein, tropomyosin is distributed at regular intervals on the troponin.
III. Myosin is a thick filament which is also a pollymerised protein.
IV. The globular head of meromyosin consists of light meromyosin (LMM). **Identify the correct statements**
a) I, II and III b) I, II and IV c) I and III d) II and IV

49. Match the following

Column I

1. Ball and socket
2. Hinge
3. Pivot
4. Saddle

Column II

- p. Carpal and metacarpal of thumb
- q. Atlas and axis
- r. Frontal and parietal
- s. Knee
- t. Humerus and pectoral girdle

a) 1 = t, 2 = s, 3 = q, 4 = p

b) 1 = p, 2 = r, 3 = s, 4 = t

c) 1 = t, 2 = s, 3 = r, 4 = p

d) 1 = p, 2 = q, 3 = t, 4 = s

50. The number of occipital condyles in man is/are

a) one

b) two

c) three

d) four

51. Progressive degeneration of skeletal muscle, mostly due to genetic disorder occurs in

a) myasthenia gravis

b) muscular dystrophy

c) tetany

d) osteoporosis

52. The joint found in head of upper arm and pectoral girdle is

a) hinge joint

b) ball and socket joint

c) gliding joint

d) saddle joint

53. The cytoplasmic segment of striated muscle fibre is termed

a) metamere

b) neuromere

c) sarcoplasm

d) sarcomere

54. Which of the following is made up of a single bone in mammals?

a) Dentary

b) Hyoid

c) Upper jaw

d) All of the above

55. Zygomatic is a part of

a) pelvic girdle

b) skull

c) pectoral girdle

d) vertebral column

56. Odontoid process occurs in

a) Atlas

b) Sacral

c) Axis

d) None of these

57. Muscles immune to fatigue are

a) cardiac

b) eye muscles

c) unstriated

d) skeletal

58. Fibrous joints are

a) amphiarthrous

b) diarthrous

c) synarthrous

d) None of these

59. Spinal cord passes through

a) foramen of Monro

b) iter

c) obturator foramen

d) foramen magnum

60. Anisotropic band is made of

a) myosin filaments

b) actin filaments

c) elastin filaments

d) Both (a) and (b)