

INDIAN SCHOOL AL WADI AL KABIR



DEPARTMENT OF SCIENCE (2023 –2024)

CLASS: XI	SUBJECT: BIOLOGY	DATE : 11/2/2024
WORKSHEET WITH ANSWERS	TOPIC: LOCOMOTION AND MOVEMENT	NOTE: A4 FILE FORMAT
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

1Mark Questions

Q1. The _____ secretes a fluid that cushions and lubricates the joints

- a) Cutaneous membrane
- b) Synovial membrane
- c) Mucous membrane
- d) None of the above

Q2. Which of the following is accurate?

- a) Humans have 2 pairs of false floating ribs
- b) Humans have 1 pair of false floating ribs
- c) Humans have 3 pairs of false floating ribs
- d) Humans have 7 pairs of false floating ribs

Q3. _____ is an example of an imperfect joint

- a) Ball & socket joint

- b) Pubic symphysis
- c) Elbow joint
- d) None of the above

Q4. The _____ is the largest sesamoid bone in the human body

- a) Pelvis
- b) Femur
- c) Ulna
- d) Patella

Q5. The _____ is the only movable part of the skull.

- a) Nasal Conchae
- b) Mandible
- c) Vomer
- d) Maxilla

II : Assertion and reasoning:

- a) Assertion and Reason are true and Reason is the correct explanation of the Assertion.
- b) Assertion and Reason are true but Reason is not a correct explanation of the Assertion.
- c) Assertion is true but the Reason is false.
- d) Assertion and Reason are false.

Q.6. Assertion: Visceral muscles are smooth in appearance.

Reason: Many muscle cells assemble in a branching pattern to form a visceral muscle.

Q.7. Assertion: Locomotion in Hydra is carried out by two types of contractile cells.

Reason: Muscle fibers are lacking in Hydra.

Q.8. Assertion: Extra oxygen consumption in human body is known as oxygen debt.

Reason: The extra oxygen is required by the body to oxidize the accumulated lactic acid produced during strenuous exercise.

Q.9. Assertion: Biceps and triceps are called antagonistic muscles.

Reason: This is since they contract and relax together.

Q.10. Assertion: Fatigue is inability of muscle to relax.

Reason: It is due to lactic acid accumulation by repeated contractions.

2Mark Questions

Q.11. List the name of the human body cells/tissues that:

- a) Display ameboid movement
- b) Display ciliary movement

Q.12. A complete coordinated activity of muscular _____, _____ systems leads to locomotion.

Q.13. Name the cell referring to sarcoplasm, sarcoplasmic reticulum, and sarcolemma. Also, list the parts of cells that refer to these names.

Q.14. List the correct order of the middle ear bones called ear ossicles starting from the eardrum.

Q.15. State the difference between the matrix of bones and cartilage.

Q.16. Where in the body is the ball and socket joint present?

3Mark Questions

Q.17. Define the following terms with respect to the rib cage:

- a) Bicephalic ribs
- c) True ribs
- c) Floating ribs

Q.18. Old people usually suffer from inflamed and stiff joints, name the condition. State the reasons for the symptoms.

Q.19. What is Gout?

Q.20. What is the significance of locomotion in animals?

4Mark Questions

Q.21. CASE STUDY

Cells of the human body exhibit three main types of movements, namely, amoeboid, ciliary and muscular. Some specialised cells in our body like macrophages and leucocytes in blood exhibit amoeboid movement. It is effected by pseudopodia formed by the streaming of protoplasm (as in Amoeba). Cytoskeletal elements like microfilaments are also involved in amoeboid movement. Ciliary movement occurs in most of our internal tubular organs which are lined by ciliated epithelium. The coordinated movements of cilia in the trachea help us in removing dust particles and some of the foreign substances inhaled along with the atmospheric air. Passage of ova through the female reproductive tract is also facilitated by the ciliary movement. Movement of our limbs, jaws, tongue, etc, require muscular movement. The contractile property of muscles are effectively used for locomotion and other movements by human beings and majority of multicellular organisms. Locomotion requires a perfect coordinated activity of muscular, skeletal and neural systems. In this chapter, you will learn about the types of muscles, their structure, and mechanism of their contraction and important aspects of the skeletal system.

1) Which of the following locomotory organ facilitate locomotion in Paramecium?

- a) Tentacles
- b) Cilia
- c) Jaw
- d) cytopharynx

2) In human, internal tubular organs are lined by _____

- a) Squamous epithelium
- b) Cuboidal epithelium
- c) Ciliated epithelium
- d) Columnar epithelial

3) Give the example of ciliary movement in human?

4) Name the structure is formed to carry out movement in amoeba.

5Mark Question

Q.22. Describe the significance of Ca^{2+} ions in the contraction of muscles.

Q.23. Does calcium ion concentration in blood cause tetany in some cases?
Compare fluctuation in blood calcium with tetany.

ANSWER KEY

1. b
2. a
3. b
4. d
5. b
6. c
7. a
8. b
9. c
10. a

11. a) Macrophages and leucocytes. Cytoskeletal elements such as microfilaments are involved too.

b) They mostly occur in internal organs that are lined by the ciliated epithelium. Cilia in the trachea, Ciliated epithelium in the fallopian tube.

12. Skeletal system and neural systems.

13. Each muscle cell or fibre is lined by the plasma membrane known as the sarcolemma which contains the sarcoplasm. A muscle fibre is a syncytium as the sarcoplasm possesses many nuclei. The sarcoplasmic reticulum of the muscle fibres stores calcium ions.

14. Malleus, incus, and stapes.

15. The matrix of bones has an inflexible material called the ossein and contains calcium salts whereas the matrix of cartilage has a flexible material, the chondrin and may or may not have calcium salts.

16. They are present between the humerus and pectoral girdle – the shoulder joints, hip joints, and femur bone in the socket of the pelvic girdle.

17. a) Each rib has two articulating surfaces on its dorsal end and is referred to as bicephalic ribs.

b) These are the first seven pairs of ribs which are ventrally attached to the sternum with the assistance of hyaline cartilage and dorsally appended to the thoracic vertebrae.

c) They are the last two pairs of ribs and are not attached ventrally to the sternum hence the name.

18. This condition is known as Arthritis. It is also referred to as Joint Pain or Joint Disease. The chances of arthritis increase with old age. Arthritis is caused when there is a wearing away of the cartilage that caps the bones in the joint.

19. It is the inflammation of the joints which is produced due to the buildup of uric acid crystals in the synovial joints which causes movement to become painful and difficult.

20. In animals, locomotion plays an important role in helping them to move from one place to another. Animals move for many reasons to support their living. Therefore they walk, run, jump, fly, swim and escape from their predators.

21. 1.) b

2) c

3) Ciliary movement occurs in our internal tubular organs which are lined by ciliated epithelium. Example – The coordinated movements of cilia in the trachea help us in removing dust particles and some of the foreign substances inhaled along with the atmospheric air. Passage of ova through the female reproductive tract is also facilitated by the ciliary movement.

4) Amoeboid movement is amoeba carried out by pseudopodia. Pseudopodia is the locomotory organ in amoeba.

22. Calcium plays a key role in the muscle contraction process. During contraction of muscles, from the motor endplate, an action potential passes over the sarcolemma and further into the T-tubules and sarcoplasmic reticulum and triggers it to produce Ca^{2+} ions into the sarcoplasm. The binding of calcium ions to the troponin causes its shape and position to change which in turn modifies the position and shape of tropomyosin that binds the troponin. This shift presents the active sites on the molecule, F-actin which prompts the myosin cross-bridges to bind to these active sites.

23. In the regulation of muscle contraction, calcium plays a significant role. The **parathyroid hormone (PTH)** that is secreted by the parathyroid gland

increases the calcium level in the blood. In hypoparathyroidism (PTH deficiency), the level of calcium in the blood dips which causes an increase in the excitability of muscles and nerves resulting in convulsions and cramps. It also produces sustained contractions of the muscles of the face, hands, feet, and larynx. This disorder is referred to as parathyroid tetany.

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