INDIAN SCHOOL AL WADI AL KABIR		
Class: IX	**DEPARTMENT OF SCIENCE -2025-26** **SUBJECT: BIOLOGY**	**DATE: 28/10/2025**
WORKSHEET NO. 4 WITH ANSWERS	**TOPIC: TISSUES- ANIMAL TISSUES**	**A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS:

1. Which tissue acts as the first line of protection for the body from any physical or chemical damage?
   a) Muscular tissue
   b) Connective tissue
   c) Epithelial tissue
   d) Nervous tissue
2. The tissue that stores all the fat of the human body is called:
   a) Areolar tissue
   b) Cartilage
   c) Adipose tissue
   d) Ligament
3. The skeletal muscles in our body are:
   a) Voluntary and striated
   b) Involuntary and smooth
   c) Voluntary and smooth
   d) Involuntary and striated
4. Which connective tissue is tough and flexible and provides cushioning to bones?
   a) Ligament
   b) Tendon
   c) Cartilage
   d) Areolar tissue
5. The type of tissue that helps in repairing tissue and fills up spaces inside organs is:
   a) Adipose tissue
   b) Cartilage
   c) Areolar tissue
   d) Ligament
6. The Oesophagus and lining of the mouth are covered with:
   a) Squamous epithelium
   b) Columnar epithelium

c) Cuboidal epithelium
d) Connective tissue

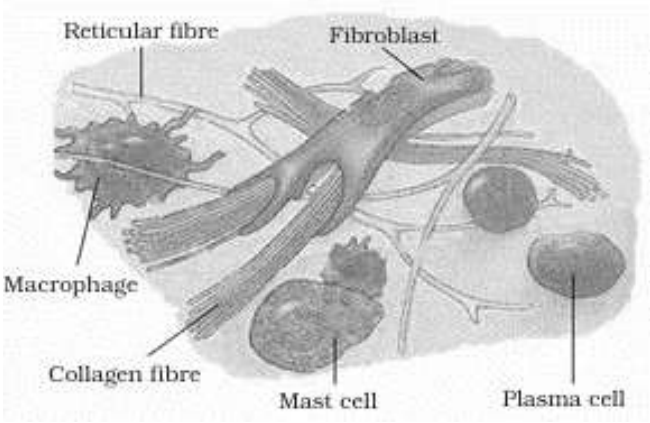
7. Two bones are connected together by:
   a) Tendons
   b) Ligaments
   c) Plasma
   d) Cartilage
8. The fat-storing connective tissue present under the skin is:
   a) Areolar
   b) Adipose
   c) Adrenals
   d) Cartilage
9. The nervous tissue is made up of cells called:
   a) Neurons
   b) Adipocytes
   c) Fibroblasts
   d) Myocytes
10. The matrix is fluid in which connective tissue?
   a) Areolar
   b) Adipose
   c) Cartilage
   d) Blood

For questions 11 to 15, two statements are given-one labelled Assertion (A) and the other labelled Reason(R). Select the correct answer to these questions from the options(i), (ii), (iii) and (iv)as given below:
(i) Both A and R are true, and R is the correct explanation of the assertion.
(ii) Both A and R are true, but R is not the correct explanation of the assertion.
(iii) A is true but R is false.
(iv) A is false, but R is true.

11. **Assertion (A):** Bone is a connective tissue which is very hard and rigid.
    Reason (R): The matrix consists of calcium and phosphate.
12. **Assertion (A):** Epithelium has only a small amount of cementing material between them and almost no intercellular spaces.
    Reason (R): Anything entering or leaving the body must cross at least one layer of epithelium.
13. **Assertion (A):** Skin epithelial cells are arranged in a single layer.
    Reason (R): Skin epithelium prevents wear and tear.
14. **Assertion (A):** Two bones can be connected to each other by another type of connective tissue called the Ligaments.
    Reason (R): This tissue is not elastic. It has considerably less strength.
15. **Assertion (A):** The functional combination of nerve and muscle tissue is not fundamental to most animals.
    Reason (R): This combination allows animals to move rapidly in response to stimuli.

II. SHORT ANSWER TYPE QUESTIONS (2M):

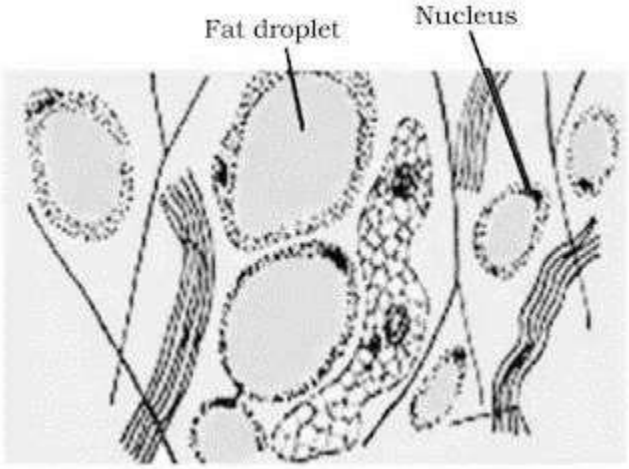
16. Identify the tissue:
    a) That has the ability to respond to stimuli.
    b) Fat-storing tissue.
17. Name the connective tissue that has a hard matrix. What is its importance?
18. Identify the tissue in the figure given below and write its function.



19. Why are skeletal muscles called voluntary muscles?
20. What does a neuron consist of?

III. SHORT ANSWER TYPE QUESTIONS (3 M):

21. Observe the given figure and answer the following questions-



Adipocyte

(i) Identify the tissue given in the figure
(ii) Mention the characteristic features of these cells.
(iii) Specify the function of this tissue.
(iv) Name the part of the body where these tissues are present.

22. Name the different components of the fluid connective tissue. Write two functions of the same.
23. Tabulate the skeletal muscles, smooth muscles and the cardiac muscles under the following headings.
    i) Location

ii) function
iii) Shape

24. Draw a well-labelled diagram of a nerve cell and write down the composition of nervous tissue.
25. Write down the location, structure and function of columnar epithelium tissue.

IV. LONG ANSWER TYPE QUESTIONS (5M):

26. i) Distinguish between bone and cartilage.
    ii) What is the importance of ligaments?
    iii) Why is connective tissue known so?
27. Explain the structure and function of cardiac muscle tissue. How is it different from skeletal muscle?
28. Describe the different types of connective tissues found in animals and their functions.
29. With the help of labelled diagrams, differentiate between striated muscles, unstriated muscles and cardiac muscles?

V. CASE STUDY-BASED QUESTIONS

Animal tissues play vital roles in the survival and functioning of animals. Adipose tissue, or fat-storing tissue, acts as an insulator to help animals living in cold climates retain body heat, while also providing cushioning and energy storage. Tendons are connective tissues that connect muscles to bones, allowing movement by transmitting the force generated by muscles. Damage to tendons can lead to difficulty or loss of movement. The heart is made up of cardiac muscle, a specialised, involuntary muscle that contracts rhythmically to pump blood throughout the body—any impairment here can severely affect survival. The trachea is lined with ciliated epithelium, where tiny hair-like cilia help clear mucus and harmful particles from the airways, protecting the lungs from infection. Ligaments connect bones to each other at joints, providing stability and limiting excessive movement; injury to ligaments can cause joint instability or dislocation. Together, these tissues illustrate the diverse and critical functions animal tissues perform to maintain health and bodily function.

Attempt either subpart A or B.

A. What is the role of adipose tissue in animals living in cold climates?

OR

B. How do tendons contribute to movement in animals?
C. How does the ciliated epithelium in the trachea protect the respiratory system?
D. Describe the structure and function of ligaments. How do they differ from tendons?

ANSWERS

I.OBJECTIVE TYPE QUESTIONS (1 MARK)	
1.	c) Epithelial tissue
2.	c) Adipose tissue
3.	a) Voluntary and striated
4.	c) Cartilage
5.	c) Areolar tissue
6.	a) Squamous epithelium
7.	b) Ligaments
8.	b) Adipose
9.	a) Neurons
10.	d) Blood
I. ASSERTION REASON	
11.	(i) Both A and R are true, and R is the correct explanation of the assertion.
12.	(i) Both A and R are true, and R is not the correct explanation of the assertion.
13.	(iv) A is false, but R is true.
14.	(iii) A is true, but R is false.
15.	(iv) A is false, but R is true.
II. SHORT ANSWER TYPE QUESTIONS (2 MARKS)	
16.	a) Nervous tissue b) Adipose tissue
17.	Bone – It forms the framework that supports the body. It also anchors the muscles and supports the main organs of the body.
18.	Areolar connective tissue. It fills the space inside the organs, supports internal organs and helps with repairing tissues.
19.	They are mostly attached to bones and help with body movement. Movement is under our conscious control, meaning we can decide when to make them move.
20.	A neuron consists of a cell body with a nucleus and cytoplasm, from which long, thin, hair-like parts arise. Usually, each neuron has a single long part, called the axon, and many short, branched parts called dendrites.
III. SHORT ANSWER TYPE QUESTIONS (3 MARKS)	
21.	(i) Adipose tissue (ii) Characteristic features: Cells are called adipocytes. They are large, rounded, and filled with fat globules. The cytoplasm and nucleus are pushed to the periphery of the cell. (iii) Function of this tissue:

Stores fat for energy.

Acts as an insulator to maintain body temperature.

Provides cushioning and protection to internal organs.

(iv) Location in the body:

Found below the skin.

Found between internal organs like the heart, kidneys, and around joints.

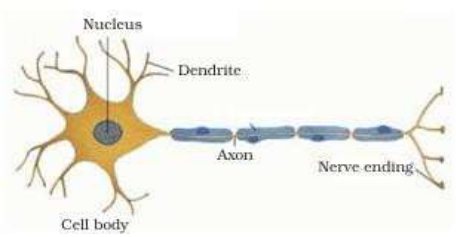
22. Blood- connective tissue. Blood has a fluid (liquid) matrix called plasma, in which red blood corpuscles (RBCs), white blood corpuscles (WBCs) and platelets are suspended. The plasma contains proteins, salts and hormones. Blood flows and transports gases, digested food, hormones and waste materials to different parts of the body.

23.

Character	Striated Muscles	Unstriated Muscles	Cardiac Muscles
1. Shape	Cells are long, cylindrical, non-tapering and are unbranched.	Cells are long with tapering ends and are unbranched.	Cells are non-tapering and cylindrical in shape and are branched.
2. Location in body	In hands, legs and skeletal muscles.	The wall of stomach, intestine, ureter and bronchi. etc.	In the heart.

Refer to the muscular tissues for functions textbook

24.



Refer to nervous Tissues in the textbook

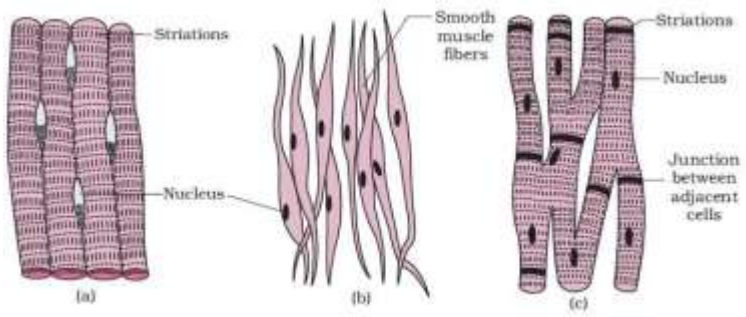
25. Location - in the inner lining of the intestine
Structure - This columnar (meaning 'pillar-like')
Function - absorption and secretion

LONG ANSWER TYPE QUESTIONS (5 MARKS)

26. (i)

Bone	Cartilage
Hard & non-flexible	Flexible & not very hard
Porous	Non-Porous
Made of calcium & Phosphorus	Made of protein & Sugar
Bone cells are known as osteocytes.	Cartilage cells are known as chondrocytes.

(ii) Two bones can be connected to each other by another type of connective tissue called the ligament.

	(iii) Connect, support, and help bind other tissues.
27.	Cardiac muscle tissue is found only in the heart. It is composed of branched, striated cells with a single nucleus. This muscle is involuntary, meaning it contracts without conscious control. Its primary function is to pump blood throughout the body by rhythmic contractions. Differences from skeletal muscle: • Cardiac muscle cells are branched; skeletal muscle cells are long and cylindrical. • Cardiac muscle is involuntary; skeletal muscle is voluntary. • Both are striated but differ in location and control.
28.	Bone – Hard and rigid; provides structural support and protects internal organs. Cartilage – Flexible and smooth; cushions joints and shapes body parts like the nose and ear. Ligaments – Connect bone to bone; strong and flexible to stabilise joints. Tendons – Connect muscle to bone; transmit force to facilitate movement. Adipose tissue – Stores fat, provides insulation, and cushions organs. Blood – Fluid connective tissue that transports oxygen, nutrients, and wastes.
29.	 Also, refer to the muscular tissues in the textbook
V. CASE STUDY-BASED QUESTIONS	
A.	Adipose tissue acts as an insulator to help retain body heat and also provides cushioning and stores energy.
B.	Tendons connect muscles to bones and transmit the force generated by muscles to bones, enabling movement.
C.	The cilia in the epithelium move mucus and trapped particles out of the airways, preventing infection and keeping the lungs clean.

D.	Ligaments are strong bands of dense connective tissue made primarily of collagen fibers, and they connect bones to other bones at joints. Their functions include providing stability to joints and preventing dislocation, as well as allowing controlled movement by restricting excessive motion. Ligaments differ from tendons in that ligaments connect bone to bone, whereas tendons connect muscle to bone. Additionally, ligaments are more elastic to accommodate joint movement, while tendons are tougher to transmit muscular force.

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