SCIENCE (BIOLOGY)
WORKSHEET_130923
CHAPTER 06 TISSUES (ANSWERS)

SUBJECT: SCIENCE **MAX. MARKS : 40**

CLASS : IX **DURATION : 1½ hrs**

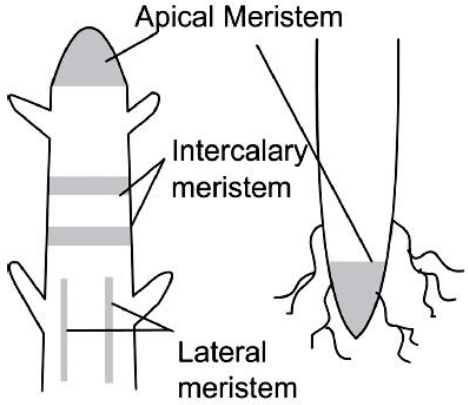
General Instructions:

(i). **All** questions are compulsory.
(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.
(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.
(iv). There is no overall choice.
(v). Use of Calculators is not permitted

SECTION – A

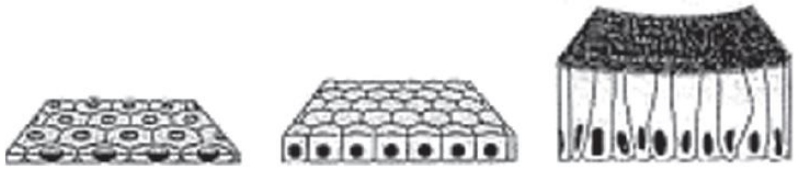
Questions 1 to 10 carry 1 mark each.

1. Observe the given figure and answer the question that follows.



What is the main function of meristematic tissue?
(a) Growth (b) Photosynthesis (c) Respiration (d) Transpiration
Ans. (a) Growth
Meristematic tissue is made up of a group of cells that divides continuously to give rise to new cells. The cells of meristematic tissue helps in increasing the length and girth of the plant.

2. The picture shows three types of tissues found in the human body.



The inner lining of alveoli (air sacs in lungs is very thin and delicate. Which type of tissue forms the inner lining of alveoli?
(a) Tissue (I) (b) Tissue (II) (c) Tissue (III) (d) Tissue (I) and (II)
Ans. (a) Tissue (I)
Tissue (I) forms the inner lining of the alveoli. Tissue (I) is the simple squamous epithelium. In lung alveoli, the transportation of substances occurs through a selectively permeable surface. Simple squamous epithelial cells are extremely thin and flat and form a delicate lining. Tissue (II) is cuboidal tissue and tissue (III) is columnar epithelial tissue.

3. During recess, Ritesh was having lunch with his friends. One of his friends said that the intestine helps in the digestion of food. Ritesh's sister was also present there. She asked the name of tissue which is responsible for the absorption of food.

(a) Stratified squamous epithelium (b) Columnar epithelium
(c) Spindle fibres (d) Cuboidal epithelium

Ans. (b) Columnar epithelium

The stomach, large intestine and small intestine all include columnar epithelium, which acts as a barrier to bacteria and other germs while allowing digested food to pass through. It is made up of pillar-like cells with nuclei at the bottom.

4. Involuntary muscles are found in:

(I) Skeletal muscles (II) Cardiac muscles (III) Striated muscles (IV) Smooth muscles

Options:

(a) (I) and (II) (b) (II) and (III) (c) (II) and (IV) (d) All of the above except (I)

Ans. (c) (II) and (IV)

The muscles that line the inner side of hollow visceral organs are called smooth muscles. They don't function in accordance to our wish. They help with muscle contractions that move food through the digestive tract (called peristaltic motions) in the gastrointestinal tract and the male genital tract.

The heart has cardiac muscles. They contract and release at a quick, rhythmic and unending rate. They assist in the circulation of blood to numerous regions of the body.

5. Blood is a connective tissue which has a fluid (liquid) matrix called plasma in which RBCs, WBCs and platelets are suspended. The plasma contains proteins, salts and hormones. Blood flows and transports gases, nutrients, hormones and waste materials to different parts of the body.

Hemoglobin is present in which component of the blood:

(a) RBCs (b) WBCs (c) platelets (d) plasma

Ans. (a) RBCs

Hemoglobin is composed of a protein hence that has oxygen binding capacity. It is the most important component of red blood cells.

6. Which of the following is responsible for a bamboo stem's rapid extension?

(a) Lateral meristem
(b) Intercalary meristem
(c) Apical meristem
(d) Cambium

Ans. (b) Intercalary meristem

The intercalary meristem is responsible for the rapid extension of a bamboo stem. At the nodes of hollow stems or culms (in sugarcane and bamboo), intercalary meristems allow for fast stem extension. They are found at the base of the stem or leaf internodes.

These are made up of remains of the apical meristem that were found at the nodes and internodes of the stem or leaf.

7. Choose the wrong statement.

(a) The nature of the matrix differs according to the function of the tissue.
(b) Fats are stored below the skin and in between the internal organs.
(c) Epithelial tissues have intercellular spaces between them.
(d) Cells of striated muscles are multinucleated and unbranched.

Ans. (c) Epithelial tissues have intercellular spaces between them.

Intercellular spaces are absent in epithelial tissues. They form a sheet or layer of cells that are in continuous form.

8. The tissue that lines and covers the body is:

(a) Epithelial (b) Connective (c) Nervous (d) Muscle
Ans. (a) Epithelial
Epithelial tissue is found in multicellular organisms. It is found in the top layer of the skin and covers the entire body. The inner lining of body cavities and hollow organs is made up of this type of tissue.

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

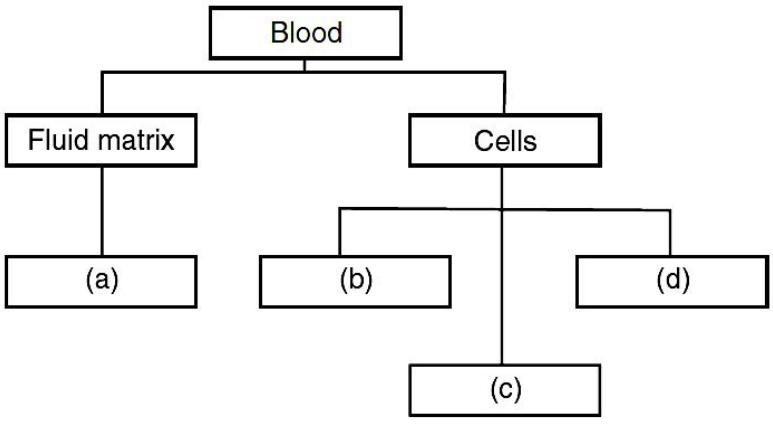
9. Assertion (A): Xylem and phloem are called vascular tissues.
Reason (R): Vascular tissues conduct water, mineral salts and food materials to different plant parts.
Ans. (a) Both A and R are true and R is the correct explanation of A.
The vascular tissue that transports water and minerals in plants is known as xylem. Thus, the conducting or vascular tissues are called the xylem and phloem. The xylem carries water and dissolved minerals from the plant's roots to its leaves. Phloem helps in the movement of food from leaves to other parts of the plant.

10. Assertion (A): Cilia are hair-like structures present on the inner surfaces of hollow organs.
Reason (R): Ciliated epithelium causes the movement of cilia to push the particles in a particular direction.
Ans. (b) Both A and R are true and R is not the correct explanation of A.
The cilia have the ability to move particles, free cells and mucus in a certain direction. It can be found on the inner walls of hollow organs like fallopian tubes, bronchioles and tiny bronchi, where it facilitates the passage of particles.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Mention the different components of blood in the following diagram ?



Ans. (a) Plasma, (b) WBC, (c) Platelets, (d) RBC.

12. Why are plants and animals made up of different tissues?
Ans. Plants are stationary thus their supportive tissue is made up of dead cells.
Animals move, hence they possess living cells to provide energy for movement. Also, for the many more differences and functions in plants and animals, they are made up of different tissues.

13. Why is blood called connective tissue?

Ans. The blood is composed of cells and plasma. Plasma is a fluid and cells like red blood cells, white blood cells and platelets are present in it. All these cells are connected due to plasma. It also transports absorbed nutrients, water gases like (O_2 and CO_2) to the different parts of the body and connects them.

14. (a) What is the lining of blood vessels made up of?
(b) What is the lining of the small intestine made up of?
(c) What is the lining of kidney tubules ade up of?
(d) Where are epithelial cells with cilia found?
Ans. (a) Squamous epithelium
(b) Columnar epithelium
(c) Cuboidal epithelium
(d) In respiratory tract

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Name three types of muscle tissues and give function of each.
Ans. Three types of muscle tissues are:
(a) Striated muscle (b) Smooth muscle (c) Cardiac muscle
(a) Striated muscle: These muscles show alternate light and dark bands or striations. They are voluntary muscles and present in skeletal tissues, help in movement of body and bones.
(b) Smooth muscle: These are involuntary muscles, control the movement of food in alimentary canal, contraction and relaxation of blood vessels. Present in iris, uterus etc.
(c) Cardiac muscle: These muscles are present in heart which help in the rhythmic contraction and relaxation of heart throughout the life.

16. Give reasons for:
(a) We get a crunchy and granular feeling when we chew pear fruit.
(b) Branches of a tree move and bend freely in high wind velocity.
(c) Intercellular spaces are absent in sclerenchymatous tissues.
Ans. (a) Pear fruit has stone cells or sclereids which are a type of sclerenchyma. These cells give a crunchy and granular sensation while chewing.
(b) Collenchyma can be found at the end of a branch. It is a flexible tissue. As a result, tree branches move and bend freely at high wind velocities.
(c) Sclerenchyma tissue lacks intercellular space because the cells are dead and the cell walls are thickened due to lignin deposition which acts as a block of cement.

OR

Differentiate between meristematic and permanent tissue.
Ans. The differences between meristematic and permanent tissues are:

Meristematic Tissue	Permanent Tissue
(1) Meristematic tissues are spherical oval, rectangular polygons in shape.	Permanent tissues are large and different in shape.
(2) Vacuole is absent.	Vacuole is present.
(3) The cells are arranged in a compact manner due to which there is no intercellular space between them.	Intercellular spaces are present in between the cells.
(4) Cell walls of the meristematic tissue are thin and flexible.	Cell walls of permanent tissue are either thin or thick.
(5) It is a simple tissue.	It can be simple, complex or specialized.
(6) Meristematic tissues are living cells.	Permanent tissues may be living or dead.

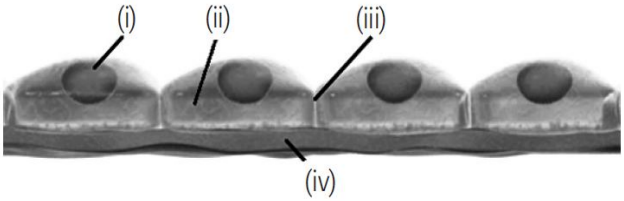
17. (i) Name the animal tissue which is present in the larynx.
(ii) Write the chemical constituents of this tissue.

(iii) What functions does this tissue perform ?
Ans. (i) Cartilage.
(ii) Proteins and sugar.
(iii) Smoothens body surfaces at joints, helps in easy bending.

SECTION – D

Questions 18 carry 5 marks each.

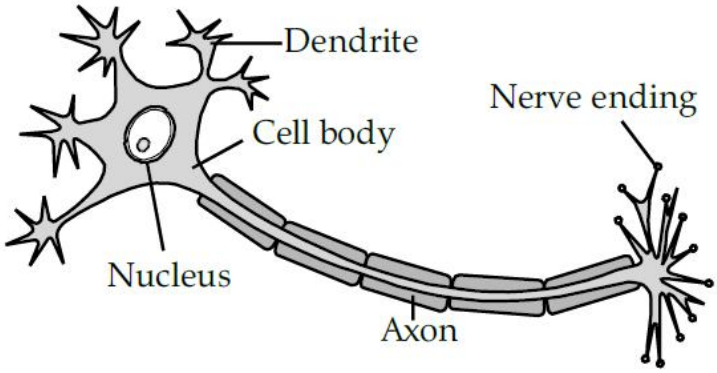
18. A teacher shows a type of animal tissue in two different shapes and asks the following questions related to it to the students in class.



(a) Which animal tissue is represented in the figure given above?
(b) Label figure (i) to (iv).
(c) Describe the tissue and its function.
(d) What are the different types of animal tissues?
Ans. (a) The animal tissue shown in the figure is Squamous epithelium.
(b) Figure labelling is as follows:
(i) Nucleus
(ii) Cytoplasm
(iii) Cement substance
(iv) Basement membrane
(c) Squamous epithelium cells have an irregular, flat structure that resembles floor tiles to form a compact structure. It is found in the mouth, nose, oesophagus, alveoli and lining of blood vessels. It also protects the skin and the tongue.
It protects against mechanical damage, germ invasion, drying and chemicals. Filtration happens through the formation of a selectively permeable membrane.
(d) Different types of animal tissues are:
(i) Cuboidal epithelium
(ii) Columnar epithelium
(iii) Ciliated epithelium
(iv) Glandular epithelium

OR

What is the basic unit of the nervous system? Draw a well-labelled diagram of the unit and explain the function of each element of this unit.
Ans. The basic unit of the nervous system is the neuron.
Neurons are called nerve cells. A neuron is made up of a cell body containing a nucleus and cytoplasm, as well as long thin hair-like components. Each neuron has a single long process (axon) and many short, branching sections called dendrites.



The neurons' primary role is to transmit received information and deliver suitable signals to the rest of the body. The signals that are received are in the form of electrical signals.

Dendrites, axons and the cell body make up a neuron.
Dendrites: These are branch-like structures that receive and transmit messages from other neurons to the cell body.
Cell body: A nucleus, Golgi body, endoplasmic reticulum, mitochondria, and other components make up the cell body of each neuron.
Axon: The axon is a tube-like structure that transports electrical impulses from the cell body to the axon terminals, which then transmit the impulse to another neuron.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Read the following information and answer the questions based on information and related studied concepts.

A student investigated the loss of water from plant leaves. Following steps were taken by the student to conduct the experiment.
Step 1: Took four leaves from the same plant.
Step 2: Weighed all the ten leaves.
Step 3: Hung the leaves in the classroom for four days.
Step 4: Weighed all leaves again.
Step 5: Calculated the amount of water lost by the leaves.
Step 6: Repeated steps 1 to 5 with grease spread on the upper surface of the leaves.
Step 7: Repeated steps 1 to 5 with grease spread on both the upper and lower surfaces of the leaves.

Table shows the results obtained by the student.

Treatment of leaves	Amount of water lost by leaves (in grams)
No grease was used on the leaves.	0.98
Grease used on the upper surface of the leaves.	0.86
Grease used on the upper and lower surface of the leaves.	0.01

(a) What are these pores observed known as? (1)
(b) Very little water was lost from the leaf hen both surfaces were covered with grease. Give a reason. (2)
(c) Compare the rate of transpiration in day and night. (1)
Ans. (a) We observe small pores here and there in the epidermis of the leaf called stomata. They are guarded by kidney-shaped cells called guard cells.
(b) When the leaves were covered with grease, stomata on both surfaces will get blocked. This leads to a drastic drop in the transpiration rate.
(c) Rate of transpiration is more during the day while less at night.

20. Read the given passage and answer the questions that follow based on the passage and related studied concepts.

Mahesh while playing football with his friends got injured suddenly. His friends took him to the hospital and the doctor told that he was suffering from sprain and advised bed rest. Every afternoon, his friends visited him to enquire about his health.

(a) During a sprain, which type of tissue are stresses?
(b) Which tissue connects bones to muscles in humans?
(c) Why dislocation of bones takes place?
(d) Which tissue connect one bone to another bone?
Ans. (a) Ligaments
With severe sprain, ligaments tear completely or separate from the bone
(b) Tendons
A tendon is a fibrous connective tissue which attaches muscle to bones
(c) Due to breakage of bones
Ligaments are torned when dislocation occurs, as ligaments are flexible bands of fibrous tissue.
(d) Ligament
A Ligament is a fibrous connective tissue which attaches bone to bone and usually serves to hold structures together