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Holiday Homework

Plant tissues

1) Protoplasm means the cytoplasm and the nucleus of a cell. It is the living content of a cell which is surrounded by a plasma membrane.

2) Tissue is a group of cells that have similar structure and that function together as a unit.

3) Lateral meristem is also called secondary meristem.

4) Parenchyma contains chlorophyll.

5)

Temporary tissue	Permanent tissue
• Cells of these tissue divide throughout their life.	• They lose the ability to divide to take up specific function.
• They are located at specific regions of the plant i.e. apical, lateral and intercalary.	• They are distributed throughout the plant body.
• They lack vacuoles.	• They contain vacuoles.

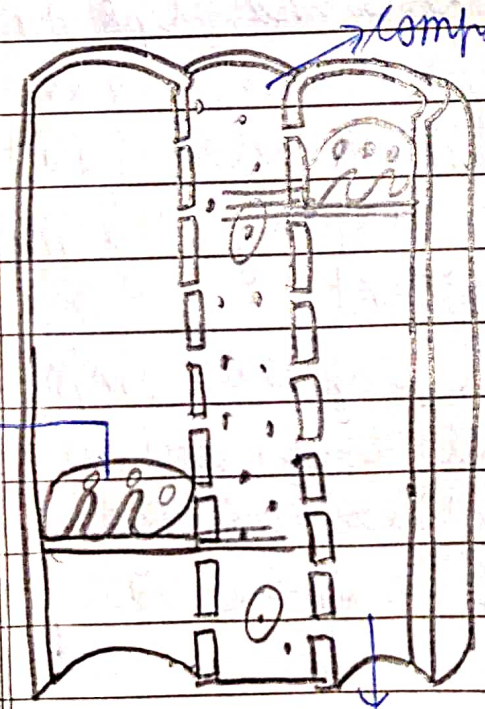
6) Meristematic tissue are made up of actively dividing cells. Their only function is to produce more cells leading to the growth of the plant body. There are 3 types of meristematic tissue i.e. apical, intercalary and lateral. These tissues are found at the growing ~~plants~~ points in a plant like the tip of roots, stems and branches where growth in length occurs.

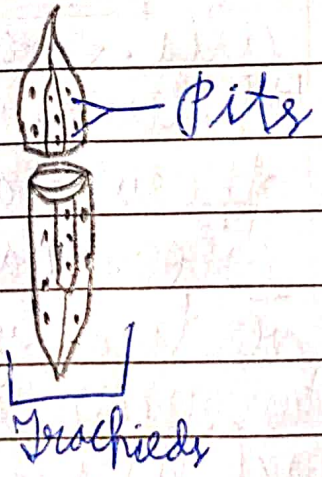
7)

Parenchyma	Collenchyma	Sclerenchyma
• It consists of a thin walled living cells.	• It consists of thin walled living cells.	• It consists of dead cells.
• They are involved in food storage.	• They are the chief mechanical tissue in young plants, particularly dicot stems.	• It is mainly a mechanical tissue.
• Comprises a thin cell wall and made up of cellulose.	• It comprises an uneven cell wall and is made up of pectin and hemicellulose	• It comprises a hard and thick cell wall and is made up of lignin.

8)

Xylem	Phloem
• Transports water and minerals absorbed by the roots to other plant parts.	• Conducts food manufactured in the leaves to other plant parts.
• Consists mainly of dead cells.	• Consists mainly of living cells.
• Conduction is unidirectional i.e. only upwards from the roots.	• Bidirectional conduction i.e. both upwards and downwards from the leaves.





Xylem

Muscular tissues: types, location and function

1) Three types of muscular tissue

	Location	Function	Appearance	Control
Skeletal 	skeleton	movement, posture	striated, multi-nucleated (eccentric) fibers parallel	Voluntary
cardiac 	Heart	pump blood continously	striated, one central nucleus, branched	involuntary
Visceral (smooth muscle) 	G.I. tract, uterus, eye, blood vessels	Peristalsis, blood pressure, pupil size, erects hairs	no striations, one central nucleus	involuntary

Animal tissues

2) Epithelial tissue forms a thin protective layer of cells. It covers the surface of the body and forms the lining of various body cavities and internal organs. Epithelial cells may be flat, cuboidal or columnar in shape. Forex:

Squamous epithelium → They are composed of thin, flattened and polygonal cells. Ex- cells of the outer layer of skin. These cells are usually protective.

Cuboidal epithelium → They are composed of cube-like cells. ex- Inner wall linings of kidney tubes. These cells are usually concerned with absorption.

Ciliated epithelium → At some places in the body, forex- in the lining of the wind pipe and oviduct, the columnar epithelium has developed cilia. Such an epithelium is called ciliated epithelium. The cilia keeps lashing and move the substances in its contact.

Columnar epithelium → They are composed of vertically arranged, tall, cylendrical or column like cells. ex- inner linings of stomach and intestine. These cells are usually secretory.

1. What are the different ~~types~~ of neurons? Mention the functions of each.

Ans → The nervous tissue is made up of ellongated cells called neurons. The different parts of the neurons are dendrites, axon and a cell body or soma.

Dendrites → They are tree like projections or extensions at the begining of a neuron. They receive chemical signals from different neurons of the body. They then convert these chemical signals into electrical signals and pass them to neuron cell body.

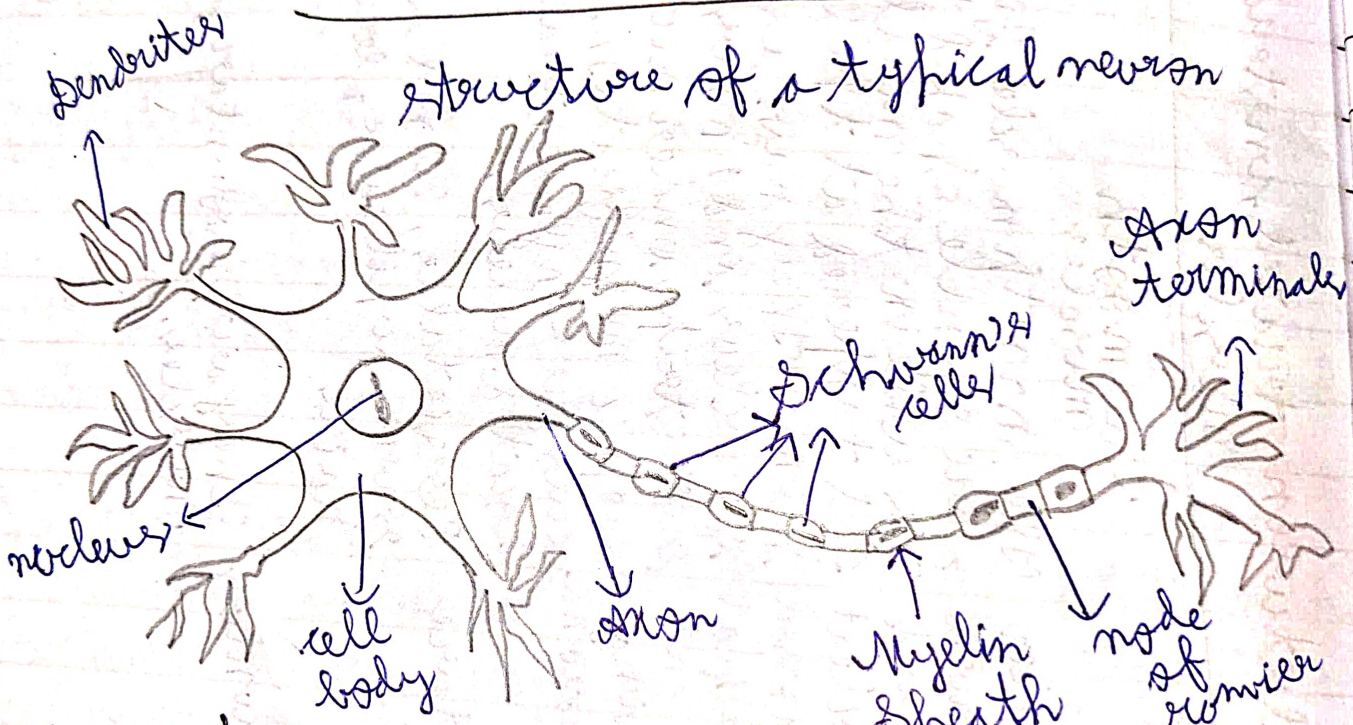
Cell body → The main function of the cell body and nucleus of the neuron is to maintain the functionality of the cell. It produces protien that are required by the different ~~for~~ parts of the neuron to work properly.

Axon → An axon is a long structure that connects the cell body to the terminals and it also connects with other neurons, ie

the and organs of the body through nerve terminals. It helps in the rapid transmission of the signals.

Nervous tissue : Neuron

structure of a typical neuron



Nervous tissue includes

12 • Blood is a fluid connective tissue. It is a transport liquid pumped by the heart to all parts of the body after which it is returned to the heart to repeat the process.

• The main function of the blood is to transport gasses, waste materials and hormones in the body.

• It is composed of both liquid part and cellular part. The liquid part is the plasma and the cellular part includes red blood corpuscles, white blood corpuscles and platelets.

• The RBC have haemoglobin pigment which carries oxygen to tissues.

• White blood cells fight diseases and platelets are involved in clotting of blood when injured.

• The plasma also ~~contains for~~ take nutrients, hormones and proteins to the parts of the body. The plasma helps in removal of wastes from the body.

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8)

5) a. Skeletal system

b. muscular tissue

c. Osteomalacia

d. ~~Ans~~ neural or brain tissue

e. connective tissue

6. a.

Tendons	Ligaments
• connects skeletal muscles to bones.	• connects bones to bones.
• Tough and elastic	• elastic
• Each muscle contains only one tendon.	• Each joint contains many ligaments.
• White in colour	• Yellow in colour

b)

Bone	Cartilage
• Bones are the hard, inelastic and a tough organ that forms part of the vertebral skeleton.	• Cartilage is a soft, elastic and flexible connective tissue that protects the bone from rubbing each other.
• Bones are of two types: ~~cont~~ compact or spongy.	• Cartilage are of three types: Hyaline cartilage, fibrocartilage etc.
• Haversian canal system is present.	• Haversian canal system is absent.

c)

Lymph	Blood
• It is a colourless fluid.	• It is a reddish coloured liquid.
• It is a part of the lymphatic system.	• It is a part of the circulatory system.
• It helps in body defence and is a part of the immune system.	• It is involved in the circulation of nutrients, ~~from~~ hormones, oxygen and carbondioxide, water and other toxins.

d)

Voluntary muscles	Involuntary muscles
• Cylindrical, long, and unbranched shaped muscles.	• Spindle shaped, small muscles

• These muscles are multinucleated.	• These muscles are uninucleated.
• Found attached to the bones.	• Found in the walls of internal organs.
• High energy required.	• Low energy requirement.

e)

Simple epithelium	~~Stratified~~ epithelium
• Simple epithelium is the epithelium that is composed of a single layer of cells.	• Stratified epithelium is the epithelium composed of multiple layers of cells stacked on top of each other.
• All the cells are bound to the basement membraine.	• Only basal cell layers are bound to the basement membraane.
• Found in places where absorption, secretion and filtration occur.	• Found in high abrasion areas where protection is needed.

Classification of animal kingdom

1. a. Coelom is the principal body cavity in most animals, located between the intestinal canal and the body wall.

b. Notochord is a longitudinal flexible rod of cells that in the lowest chordates and in the embryos of higher vertebrates forms the supporting axis of the body.

c. Ectoderm is the outermost layer of cells or tissue of an embryo in early development or the parts derived from this, which include the epidermis, nerve tissue and nephridia.

d. The method of reproduction in which eggs are laid and embryos develop outside the mother's body, hatches eventually hatching into a young animal. Little or no development occurs ~~of~~ within the mother's body.

e. In an open circulatory system, the blood isn't enclosed in the blood vessels, but is pumped into a cavity called a ~~theom~~ hemocoel. As the heart beats and animal moves, the hemolymph circulates around the organs within the body cavity, reentering the heart through openings called ostia

2. a.

Bilateral symetry	Radial symetry
• Limbs and organs are paired.	• Limbs and organs occur all around the central axis.
• The animal's body can be divided into two equal halves (i.e. mirror images) by one plane called mid-sagittal plane.	• The animal's body can be divided into two equal halves by any vertical plane passing through the central axis.
• ex - earthworm, frog, fish, human being etc	• ex - Hydra, starfish etc.

b.

Arthropoda	Mollusca
• Arthropods are animals having a segmented body with paired appendages or legs.	• Molluscs are animals having soft bodies usually covered in mucus.
• In arthropods, the exoskeleton is made up of chitin.	• The shells in the molluscs are made of calcareous substances secreted by mantles.
• Most of the arthropods have closed circulatory system.	• Molluscs have open circulatory system.

c.

Porifera	Coelenterata
• Porifera contains numerous pores or holes in the body.	• Coelenterata contains a body cavity, which consists of a single opening.
• They possess an exoskeleton.	• They don't possess an endoskeleton or exoskeleton.
• They exhibit cellular level of organisation.	• They exhibit tissue level of organisation.
• Bodies have no symmetry.	• They have radially symmetric bodies.

d.

Flatworms	Roundworms
• They have a thin, dorsoventrally flattened body, so called flatworms.	• They have a long cylindrical body, vermiform, unsegmented with no lateral appendages.
• They don't have a body cavity and thus are acoelomates.	• They are pseudocoelomates i.e. they have a body cavity between their mesoderm and endoderm layers.
• Liverfluke, planaria are examples of flatworms.	• Ex- Ascaris

4. a. Sponge c. dogfish
b. Hydra d. sparrow

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e. humans

5. An exoskeleton is the stiff covering on the outside of some creatures. There are often flexible joints with underlying muscles that allow for a range of movement of the exoskeleton. 2 ties

5. exoskeletons are hard coatings on the outside of some animals, mostly arthropods. They are non-living made of chitin and calcium carbonate. ex - grasshoppers, ants, bees, snails, shrimps etc.

6. • Reptiles are vertibrates. They have backbones.
• They are cold blooded.
• All species fertilize eggs internally.
• Their bodies are completely covered with scales.

7. The bones of the birds are hollow and filled with large air cavities. This makes their skeleton light and enables them to fly. On the other hand bones of other vertebrates are dense and solid and form a heavy skeleton.

8. The different classes of arthropoda are:
- Crustacea: prawn
- Arachnida: Spider
- Myriapoda: millipedes
- Insecta: Beetles

9. a. nephridia
b. skeletal muscles
c. invertebrates
d. gills
e. gills and lungs
f. three
g. calcium carbonate

Long answer type

1. Annelida | Phylum arthropoda

Annelida	Phylum arthropoda
• Annelida refers to an animal phylum that consists of coelomates with elongated, segmented body.	• Arthropods refers to an animal phylum that consists of haemocoelomates with a segmented body, joint appendages and chitinous exoskeleton.
• Lacks a distinct head.	• Body is differentiated into head, thorax and abdomen.
• Consists of several simple hearts.	• Consists of one heart.
• Excretion occurs through nephridia.	• Excretion occurs through coxal gland or malpighian tubes.

• ~~Consists of~~ lack joined appendages.	• Consists of joined appendages.

2. The main characteristics of phylum mollusca are:

- They are mostly found in marine and freshwater.
- They exhibit organ system level of organisation.
- Their body has a cavity.
- The body is divided into head, visceral mass, muscular foot and mantle.
- The muscular foot helps in locomotion.
- The body is covered by a calcareous shell.

3.

Flatworms	Roundworms
• They have a thin dorsoventrally flattened body, so called flatworms.	• They have a long cylendrical body, vermiform, unsegmented with no lateral appendages.
• They are mostly hermaphrodites.	• They are dioecious or unisexual and always show sexual dimophism.

• They have an incomplete alimentary canal.	• These are the first animals to have a complete and straight alimentary canal.
• Lack cuticles	• Consists of a hard outer covering called cuticle.
• Exhibit a thrashing motion.	• Exhibit a gliding motion.
• Live in the intestine.	• Live in the small intestine.

4. The criterias for classifying the animals into various categories are:

- Symetery
- Appendages
- Segmentation
- Skeleton
- Sex