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## SYLLABUS

## COURSE STRUCTURE

## CLASS IX

Units Marks

I	Food	13
II	Organisation in Living World -Cell Basic Unit of Life -Tissue	18
I	Organisation in Living World - Diversity in Plants and animals. - Health and Diseases	25
IV	Our Environment - Physical resources: Air, Water, Soil. - Bio-geochemical cycles in nature	12

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**Theme : Food****Unit : Food**

Plant and animal breeding and selection for quality improvement and management; use of fertilizers, manures; protection from pests and diseases; organic farming.

**Theme: The World of The Living****Unit: Organization in the living world.**

**Cell - Basic Unit of life:** Cell as a basic unit of life; prokaryotic and eukaryotic cells, multicellular organisms; cell membrane and cell wall, cell organelles; chloroplast, mitochondria, vacuoles, endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number.

TISSUES, Organs, Organ System, Organism Structure and functions of animal and plant tissues (four types in animal tissues; meristematic and permanent tissues in plants).

**Theme : The World of The Living****Unit: Organization in the living World.**

**Biological Diversity:** Diversity of plants and animals - basic issues in scientific naming, basis of classification. Hierarchy of categories / groups, Major groups of plants (salient features) (Bacteria, Thallophyta, Bryophyta, Pteridophyta, gymnosperms and Angiosperms). Major groups of animals (salient features) (Non-chordates upto phyla and chordates upto classes).

**Health and Diseases:** Health and its failure. Infectious and Non-infectious diseases, their causes and manifestation. Diseases caused by microbes (Virus, Bacteria and protozoans) and their prevention, Principles of treatment and prevention. Pulse polio programmes.

**Theme : Natural Resources****Unit : Our environment**

**Physical resources:** Air, Water, Soil.

Air for respiration, for combustion, for moderating temperatures; movements of air and its role in bringing rains across India. Air, water and soil pollution (brief introduction). Holes in ozone layer and the probable damages.

**Bio-geochemical cycles in nature :** Water, oxygen, carbon and nitrogen

## PRACTICALS

### List of Experiments

1. To test (a) the presence of starch in the given food sample (b) the presence of the adulterant metanil yellow in dal.
2. To prepare stained temporary mounts of (a) onion peel and (b) human cheek cells and to record observations and draw their labeled diagrams.
3. To identify parenchyma and sclerenchyma tissues in plants, striped muscle fibers and nerve cells in animals, from prepared slides and to draw their labeled diagrams.
4. To determine the mass percentage of water imbibed by raisins.
5. To study the characteristic of *Spirogyra/Agaricus*, Moss/Fern, *Pinus* (either with male or female cone) and an Angiospermic plant. Draw and give two identifying features of groups they belong to.
6. To observe and draw the given specimens-earthworm, cockroach, bony fish and bird. For each specimen record
  - a. one specific feature of its phylum.
  - b. one adaptive feature with reference to its habitat.
7. To study the external features of root, stem, leaf and flower of monocot and dicot plants.
8. To study the life cycle of mosquito.

### Value Based Questions

For Class IX

The Board has decided to assess students for 5 percent weighting in each subject at the Summative Assessment level in Class IX through questions which will be integrated with the content of the subject and analysed on the basis of the values it reflects

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**CHAPTER 5**  
**THE FUNDAMENTAL UNIT OF LIFE**

**Assignment No. 5**

Q1. Match the following:

I. Single matching

Column I	Column II
a) Nucleus	i. Cellulose
b) Mitochondria	ii. Double membrane
c) Cell wall	iii. Cell sap
d) Vacuole.	iv. Power house

II. Double matching

Column I	Column II	Column III
a) Multicellular organisms	i. Lipids	1. Suicide bags
b) Plasma membrane	ii. Plants	2. Inner folded membrane
c) Mitochondria	iii. Digestive enzymes	3. Proteins
d) Lysosomes	iv. Outer porous membrane	4. Animals.

Q2. Name the organelles that contain genetic material.

---

Q3. Why are lysosomes called as suicidal bags?

---

Q3. Name the three types of plastids and the functions they perform.

---

Q4. Expand: RER, SER, DNA and ATP

- 1.
- 2.
- 3.
- 4.

Q5. Shape and size of cells are related to the function they perform. Explain with example.

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Q6. A special process helps in the intake of oxygen inside the cells and release of carbon dioxide from the cells. Name the process.

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Q7. Define Osmosis and Plasmolysis.

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Q8. *Amoeba* is able to engulf its food due to the flexibility of the cell membrane. What is this process called as?

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Q9. Egg membranes from three eggs were carefully taken out and labeled as A, B and C. Each of these membranes were filled with 1% solution of sugar. Membrane A was immersed in 0.5% sugar solution, Membrane B was immersed in 1% sugar solution and Membrane C was immersed in 2% sugar solution. Predict the behaviour of the three membranes.

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Q10. Give four differences between the eukaryotic and prokaryotic cells.

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Q11. Differentiate between plant cell and animal cell on the basis of:

Cell wall, vacuole and plastids.

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Q12. Give the functions of the following (in one line)

a) Cell wall

b) Cell membrane

c) Nucleus

d) Mitochondria

e) Golgi apparatus

f) Lysosomes

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g) Plastids

h) SER

i) RER

j) Ribosomes

Q13. State the similarity between mitochondria and plastids.

Q14. Name the substances stored in Vacuole.

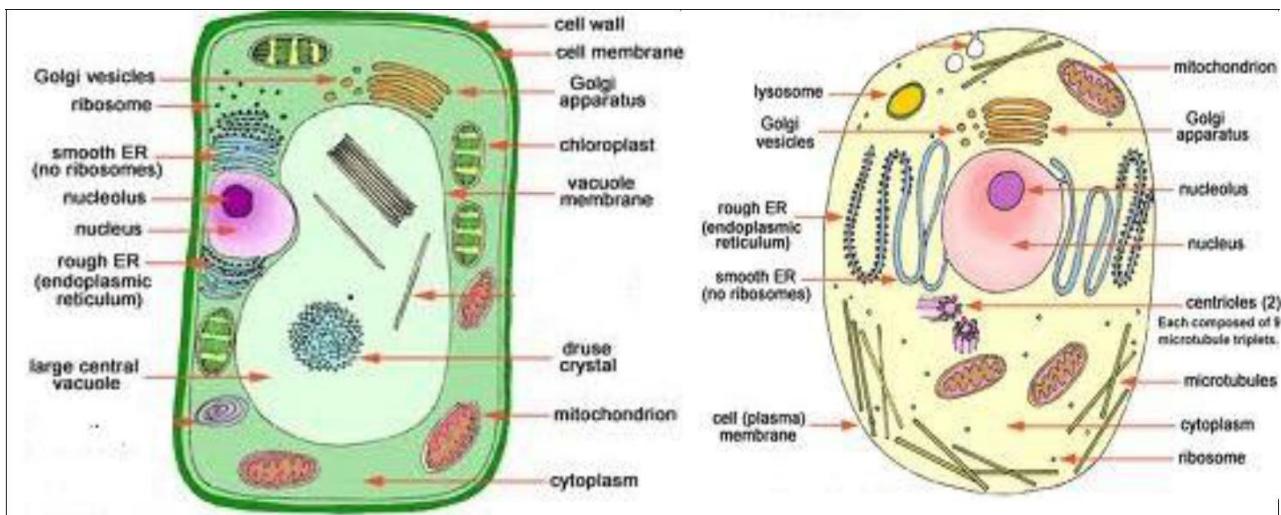
Q15 .What is the percentage of plant cell volume does the central vacuole occupy?

Q16. Why does the skin of your fingers shrink when you wash clothes for a long time?

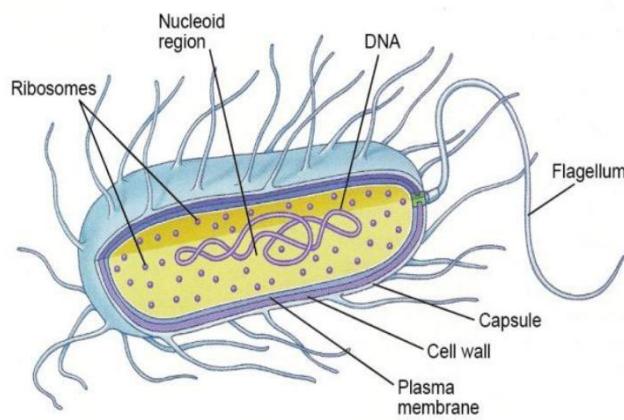
Q17. Which kind of plastid is present in

- a) Roots of the plant.
- b) Leaves of the plant.
- c) Flowers and fruits.

Q18. Different parts of a cell are shown in the following diagram. Study the parts and in the table given write the names of each part in the appropriate column.



Found in plant cells only	Found in animal cells only	Found both in plant and animal cells



## PROKARYOTIC CELL

**Multiple choice questions from the chapter**

1. The undefined nuclear region of prokaryotes are also known as  
a) nucleus    b) nucleolus    c) nucleic acid    d) nucleoid
  
2. *Amoeba* acquires its food through a process termed as  
a) exocytosis    b) endocytosis    c) plasmolysis    d) both a) and b).
  
3. Chromosomes are made up of  
a) protein    b) DNA    c) DNA and protein    d) RNA
  
4. Which cell organelle plays a crucial role in the detoxification of the cells  
a) Golgi apparatus    b) Lysosomes    c) Smooth endoplasmic reticulum    d) vacuoles
  
5. Kitchen of the cell is  
a) mitochondria    b) endoplasmic reticulum    c) chloroplast    d) Golgi apparatus
  
6. Lysosomes arises from  
a) endoplasmic reticulum    b) Golgi apparatus    c) nucleus    d) mitochondria
  
7. Living cells were discovered by  
a) Robert Hooke    b) Purkinje    c) Leeuwenhoek    d) Robert Brown
  
8. Which of the following is not the function of vacuole  
a) Storage    b) Provide turgidity    c) waste excretion    d) Locomotion
  
9. A cell shrinks if  
a) The concentration of water molecule in the cell is higher than the concentration of water molecule in the surrounding medium.  
b) The concentration of water molecule in the cell is lower than the concentration of water molecule in the surrounding medium.  
c) The concentration of water molecule is same in the cell and in the surrounding medium.  
d) Concentration of water molecule does not matter.
  
10. Power house of the cell is  
a) mitochondria    b) endoplasmic reticulum    c) chloroplast    d) Golgi apparatus.
  
11. Plasmolysis in the plant cell is defined as  
a) Break down of plasma membrane in hypotonic solution  
b) Shrinkage of cytoplasm in the hypertonic medium  
c) Shrinkage of nuclear membrane  
d) None of the above
  
12. Which of the following organelle has a single membrane  
a) Mitochondria    b) Chloroplast    c) Vacuole    d) None of the above

**Multiple choice questions Based on Practical syllabus  
Temporary Mount**

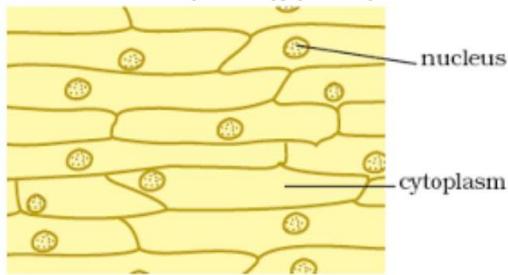
1. In order to locate the specimen under the compound microscope the objective lens to be used is

- a) 10X      b) 40X      c) 100X      d) fine adjustment and 40X

2. If the power of eyepiece is 10X and that of objective lens is 40X, then the total magnification of microscope will be

- a) 10X      b) 400X      c) 100X      d) 4X

3. The correct identification of the spot shown below is:



- a) Onion peel      b) Cheek cells      c) Sclerenchyma      d) Parenchyma
- 4) While preparing the temporary mount of cheek cell the tissue that is scrapped from the inner side of cheek is:
  - a) epithelial tissue      b) muscular tissue
  - c) connective tissue      d) nervous tissue
- 5) The stain used in preparing temporary mount of cheek cell is
  - a) glycerine      b) safranin      c) water      d) methylene blue
- 6) Which of the following organelle is visible in the temporary mount of cheek cell
  - a) nucleus      b) mitochondria      c) Golgi apparatus      d) Lysosomes
- 7) To avoid air bubble during the preparation of temporary slide one should
  - a) use needle to place the cover slip
  - b) allow the slide to fall gently on the cover slip
  - c) remove air bubbles using the brush
  - d) none of the above
- 8) After staining onion peel for 2-3 minutes what will be the colour of the peel
  - a) colourless      b) red      c) blue      d) yellow

- 9) Use of tooth pick in preparing temporary mount of cheek cell is
- to scrap the inner lining of cheek
  - to place the cover slip
  - to remove the air bubble
  - none of the above
- 10) The stain used in preparing temporary mount of onion peel is
- glycerine
  - safranin
  - water
  - methylene blue
- 11) Which of the following organelle is visible in the temporary mount of onion peel
- nucleus
  - mitochondria
  - Golgi body
  - lysosomes
- 12) Soham while observing an onion peel slide under the microscope noted the following characteristics.
- Presence of a single nucleus in a cell
  - Cells attached edge to edge without any intercellular spaces
  - Presence of cell wall around each cell
  - All of these
- 13) Human cheek cell was stained, mounted and observed under the compound microscope. The components of the cell which would be seen are :-
- Cell wall, nucleus and cytoplasm
  - Plasma membrane, cytoplasm, nucleus
  - Plasma membrane, nucleus, mitochondria
  - Cell wall, nucleus, vacuole
- 14) Use of brush in preparing temporary mount of onion peel is-
- to paint the peel
  - to transfer the peel
  - to remove the air bubble
  - to clean the slide
- 15) Microscopic observation of onion peel shows nucleus at the periphery the reason for this is
- large nucleus
  - large vacuole
  - lack of cytoplasm
  - improper staining

### Endosmosis by raisins

1. Students A, B and C were given five raisins each of equal weight. The raisins were soaked in distilled water at room temperature. A removed the raisins after, 20 minutes, B after two hours and C after 40 minutes. If  $P_A$ ,  $P_B$  &  $P_C$  denotes percentage absorption of water obtained by Students A, B and C respectively then,

- (a)  $P_A > P_B > P_C$
- (b)  $P_A < P_B < P_C$
- (c)  $P_A < P_B > P_C$
- (d)  $P_A = P_B = P_C$

2. A student dissolved 1 g of sugar in 10 mL of distilled water in a beaker A. He dissolved 10 g of sugar in 100 mL of distilled water in beaker B. Then he dropped a few raisins, in each. After two hours he found the raisins

- (a) Swollen in A and shrunken in B.
- (b) Shrunken in A and swollen in B.
- (c) Swollen in both.
- (d) Shrunken in both.

3. A student dissolved 5 g of sugar in 100 mL of distilled water in beaker A. She dissolved 100 g of sugar in 100 mL of distilled water in beaker B. Then she dropped a few raisins of equal weight in each beaker. After two hours she found the raisins in A swollen and those in B shrunken.

The inference drawn is that

- (a) Sugar concentration of raisins is lower than that of solution A and higher than that of solution B.
- (b) Sugar concentration of raisins is higher than that of solution A and lower than that of solution B.
- (c) In B the cell membrane of raisins was damaged resulting in leaching.
- (d) In A the permeability to water of the cell membrane of raisins was enhanced.

4. While performing an experiment with raisins, a student recorded the following data.

Mass of water taken in the beaker= 50 g

Mass of raisins before soaking= 20 g

Mass of raisins after soaking = 30 g

Mass of water in the beaker left after experiment = 40 g

The percentage of water absorbed by the raisin is

- a) 10 %.
- b) 20 %.
- c) 45 %.
- d) 50 %

5. 5g of raisins were placed in distilled water for 24 hours. The weight of soaked raisins was found to be 7g. The correct percentage of water observed by raisins is

- a) 20 %
- b) 25 %
- c) 40 %
- d) 45 %

### Questions on Assertion and Reason

Assertion : Cell is a fundamental and structural unit of life.

Reason : It's a prokaryotic cell.



Choose the correct alternative

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true, R is not the correct explanation of A
- c) A is true but R is false.
- d) A is false but R is true



1. Assertion: A. All living organisms are composed of cells and products of cells.

Reason : B. All cells arise from pre-existing cells.

Choose the correct option

- ( a ) A is correct but B is incorrect
- ( b ) A is incorrect but B is correct
- ( c ) Both are correct
- ( d ) Both are incorrect

2. Assertion: A. The cytoplasm is the main arena of cellular activities in both the plant and animal cells.

Reason : B. Various chemical reactions occur in it to keep the cell in the 'living state'.

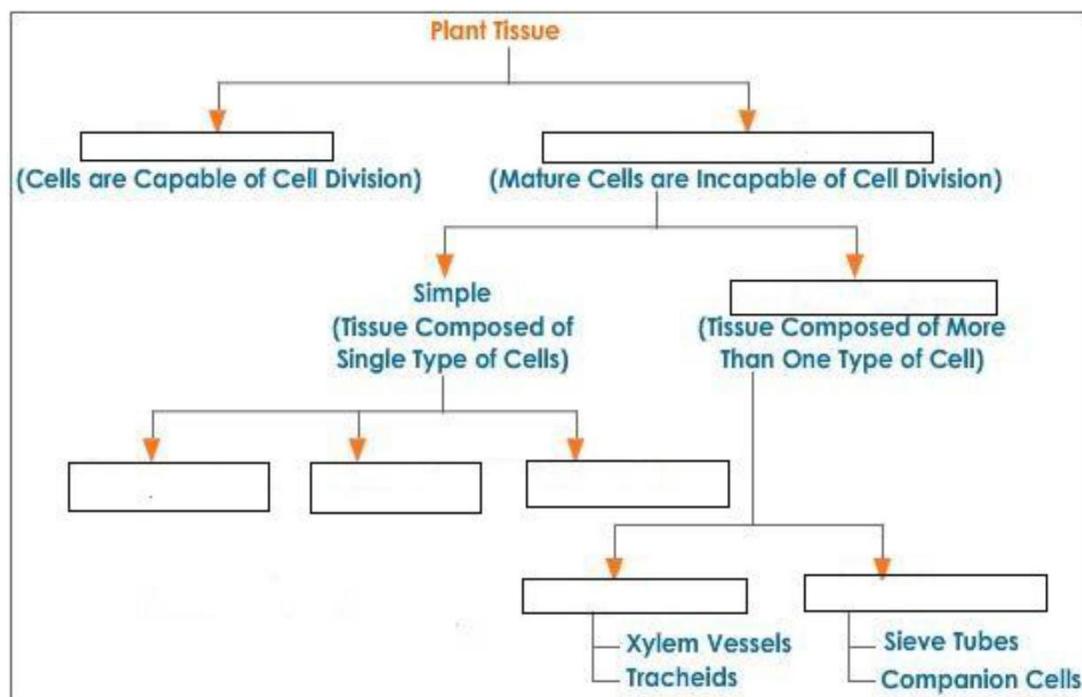
- ( a ) Both are incorrect
- ( b ) A is correct but B is incorrect
- ( c ) Both are correct
- ( d ) A is incorrect but B is correct

**Chapter 6****TISSUES****Assignment No. 6.1****Plant Tissues**

Q1. What is a tissue?

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Q2. Complete the following:



Q3. Name the Complex Permanent Tissue. Why are they called as complex tissues?

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Q4. Give the various elements of Xylem and Phloem.

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Q5. State true or false, if the statement is false correct it and rewrite the correct statement.

- (i) Tissue consisting of loosely packed cells with large intercellular spaces is parenchyma.
- (ii) Tissue consisting of regular thickening in the cells is Collenchyma.
- (iii) Chlorenchyma consists of large air cavities.
- (iv) Sclerenchyma consists of chlorophyll which makes it hard.
- (v) Small pores in the epidermis of leaf are called as stomata.
- (vi) Cork cells contain lignin.

Q6. Draw a well labeled diagram of stomata showing guard cells.

Q7. What will happen if the epidermis is covered with a layer of Vaseline?

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Q8. Give the functions of xylem and phloem.

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Q9. Name the living elements of xylem and phloem.

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Q10. Define the process of differentiation.

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**Chapter 6****TISSUES****Assignment No. 6.2****Animal Tissues**

Q1. Give reasons:

(i) Why is it essential for the oxygen to reach each and every cell of the body?

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(ii) Matrix of bone is made up of calcium.

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(iii) Presence of contractile protein in the muscles.

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(iv) Why are muscles named as unstriated?

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(v) Neurons are long cells.

---

(vi) Animals of colder region and fishes of cold water have thick layer of subcutaneous fat.

---

Q2. Complete the following:

Types of Animal Tissues → \_\_\_\_\_

Name \_\_\_\_\_

Location \_\_\_\_\_

Types of

Epithelial Tissues → \_\_\_\_\_

Q3. Give the functions and components of blood.

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Q4. Differentiate between:

- (i) Bone and Cartilage

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- (ii) Tendons and ligaments

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- (iii) Striated muscles and Cardiac muscles

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- (iv) Unstriated muscles and skeletal muscles.

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Q5. Give the function of axon and dendrite.



Q6. What is the role of Adipose tissues in our body?

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Q7. Animals of colder regions and fishes of cold water have thicker layer of subcutaneous fat. Give reason why?

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**Multiple choice questions based on the chapter.**

1. Which of the following have dead cells  
a) Parenchyma b) Sclerenchyma c) Collenchyma d) Epithelial tissue
  
2. Meristematic tissue in plants are  
a) localised and permanent.  
b) localised and dividing cells.  
c) Permanent  
d) Help in storage.
  
3. What is the function of stomata  
a) Gaseous exchange  
b) Transpiration  
c) Conduction of water  
d) Both a) and b)
  
4. Girth of the stem increases due to  
a) Apical meristem  
b) Lateral meristem  
c) Intercalary meristem  
d) Vertical meristem
  
5. The dead element present in the Phloem is  
a) Companion cells  
b) Phloem fibre  
c) Phloem parenchyma  
d) Sieve tubes
  
6. Cartilage is not found in  
a) Nose      b) Ear      c) Kidney      d) Larynx
  
7. Nerve cells does not contain  
a) axon  
b) nerve endings  
c) tendons  
d) dendrites
  
8. Bone matrix is rich in

- a) Fluoride and calcium
- b) Calcium and phosphorous
- c) Calcium and potassium
- d) Phosphorous and potassium

9. Fats are stored in the human body as

- a) Cartilage
- b) Cuboidal epithelium
- c) Adipose tissues
- d) Areolar tissues

10. Voluntary muscles are found in

- a) Alimentary canal
- b) Limbs
- c) Iris of the eye
- d) Lungs

11. Which muscle acts involuntary?

- a) Striated muscle
- b) Smooth muscles
- c) Cardiac muscles
- d) Skeletal muscles

12. The muscular tissues that works continuously without fatigue is

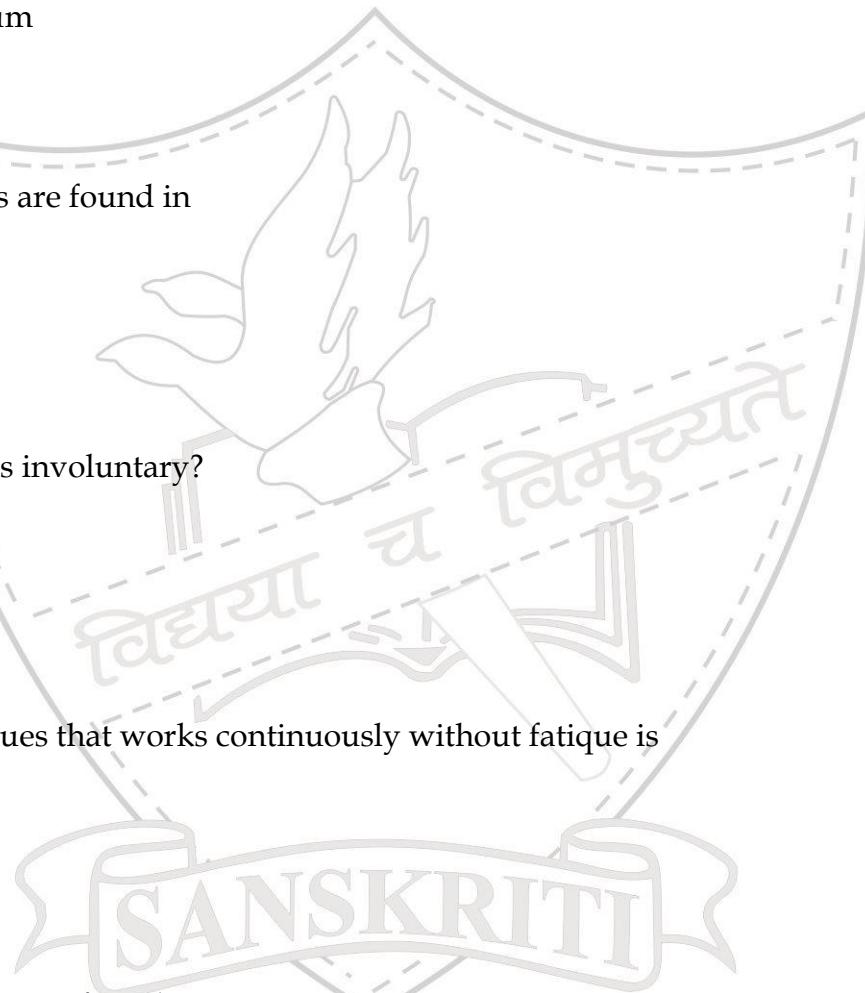
- a) Skeletal muscle
- b) Cardiac muscle
- c) Smooth muscle
- d) Voluntary muscle

13. Contractile protein are found in

- a) Bone
- b) Blood
- c) Muscles
- d) Cartilage

14. Which of the following helps in filling up the space inside the body

- a) Tendon
- b) Adipose tissue
- c) Areolar tissue
- d) Cartilage



**Multiple choice questions based on Practical syllabus**  
**Permanent slides**

- 1) You are shown a slide of plant tissue with both parenchyma and collenchyma. You can identify the collenchyma by
  - a) Location of nucleus
  - b) Position of vacuole
  - c) Thickness of the cell wall
  - d) Size of cell
  
- 2) The permanent plant tissue which is living and thin walled is
  - a) Parenchyma
  - b) Sclerenchyma
  - c) Collenchyma
  - d) Xylem
  
- 3) Which of the following is the packing tissue of the plant?
  - a) Collenchyma
  - b) Parenchyma
  - c) Sclerenchyma
  - d) Phloem
  
- 4) Striated muscles are called so because they have
  - a) inconspicuous nucleus
  - b) alternate light and dark bands
  - c) light bands only
  - d) none of the above
  
- 5) Kusum observed nerve cells under the microscope, and labeled the sketch. The mistake in her labeling is
  - a) Cilia
  - b) Dendrites
  - c) Nucleus
  - d) Cytoplasm
  
- 6) Continuously dividing tissues are called as
  - a) meristematic tissues
  - b) sclerenchyma
  - c) xylem
  - d) epithelial
  
- 7) Cuboidal epithelial cells are found in
  - a) tongue
  - b) kidney tubules
  - c) stomach
  - d) inner lining of the cheek
  
- 8) Blood is a type of
  - a) epithelial tissue
  - b) nervous tissue
  - c) connective tissue
  - d) muscular tissue
  
- 9) Muscles involved in the movement of the arm are
  - a) striated
  - b) unstriated
  - c) cardiac
  - d) smooth
  
- 10) Bases of leaves and internodes have
  - a) lateral meristem
  - b) apical meristem
  - c) intercalary meristem
  - d) none

### Questions on Assertion and Reason

**1. Assertion:** A simple tissue is made up of only one type of cell.

**Reason:** Various simple tissues in plants are parenchyma, collenchymas and sclerenchyma.

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

**2. Assertion:** The cells of connective tissues except blood secrete fibres.

**Reason:** Fibres provide strength, elasticity and flexibility to the tissue.

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

**3. Assertion:** Tissue is made up of many type of he cells.

**Reason:** Different cells have different functions.

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

**TERM 1**  
**REVISION WORKSHEET**

Q.1. Choose the correct option.

3

1. Which cell organelle is actively involved in membrane biogenesis
  - a. ER
  - b. Golgi apparatus
  - c. Lysosomes
  - d. Vacuoles
  
2. Name the process that requires energy provided by ATP
  - a. Diffusion
  - b. Osmosis
  - c. Active transport
  - d. Plasmolysis
  
3. Chromatin material consists of :-
  - a. DNA
  - b. RNA
  - c. DNA and proteins
  - d. RNA and proteins
  
4. The barrier between nuclear membrane and other environment in an animal cell is
  - a. Cell wall
  - b. Nuclear membrane
  - c. Tonoplast.
  - d. Plasma membrane
  
5. Which organelle is not bound by a membrane?
  - a. Ribosomes
  - b. Lysosomes
  - c. ER
  - d. Nucleus
  
6. Which one is an oil yielding plant among the following?
  - a. Lentil
  - b. Sunflower
  - c. Cauliflower
  - d. Hibiscus

Q.2. Match the column :-

2.5

Column A	Column B
a. cattle used for tilling and carting	i) Aseel
b. Indian breed of chicken	ii Broiler
c. Sahiwal	iii Milk producing female
d. Chicken better fed for obtaining meat	iv drought animals
e. Milch	v) Local breed of cattle

Q.3 Fill in the blanks :-

2.5

- \_\_\_\_\_ is the process by which unspecialized structures become modified and specialized for performing specialized functions
- Tracheids are \_\_\_\_\_ cells \_\_\_\_\_ (with/without) protoplasts
- \_\_\_\_\_ is made of white fibres and connects muscles to bones
- Pigeon pea is a good source of \_\_\_\_\_
- Xanthium and parthenium are commonly known as \_\_\_\_\_

Q.4 Define the following

4

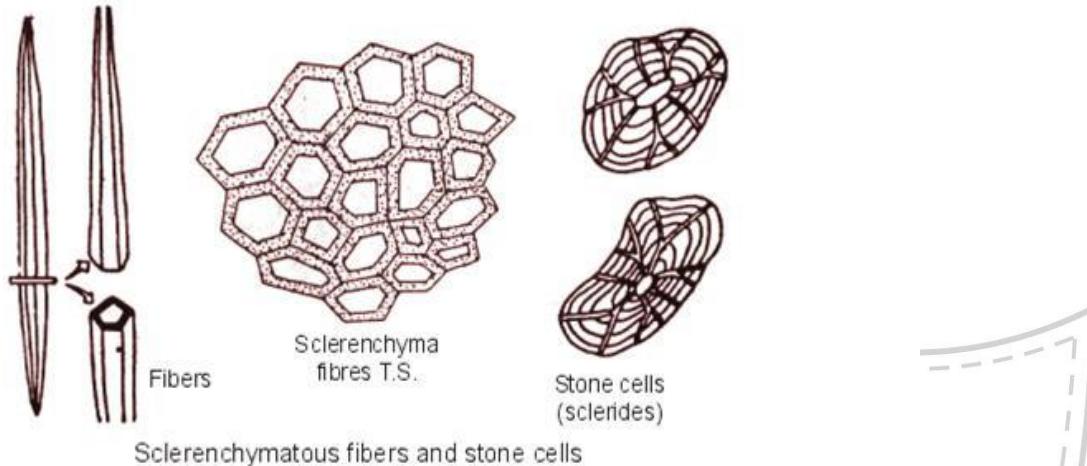
- Plasmolysis
- Osmosis
- Apiculture
- Macronutrients

Q.5 Answer the following

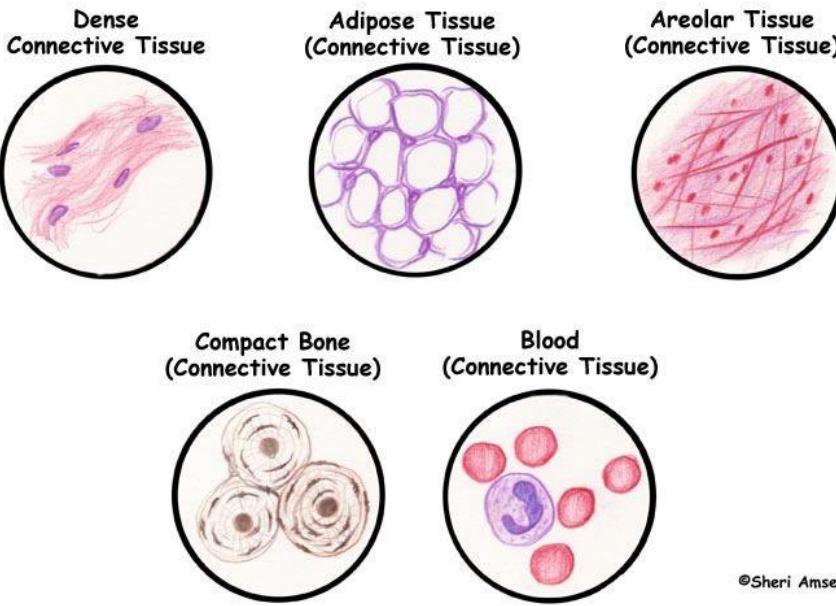
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- Differentiate between compost and Green manure
- Name two types of animal feed.
- What is the function of lignin deposition in cell wall?
- Name and draw a cell that does not have a well-defined nuclear region.  
Label any 2 parts

- Q.6 A) Identify the location of these cells.  
B) Give one function of sclerenchymatous tissue

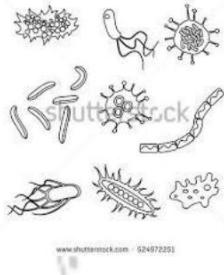


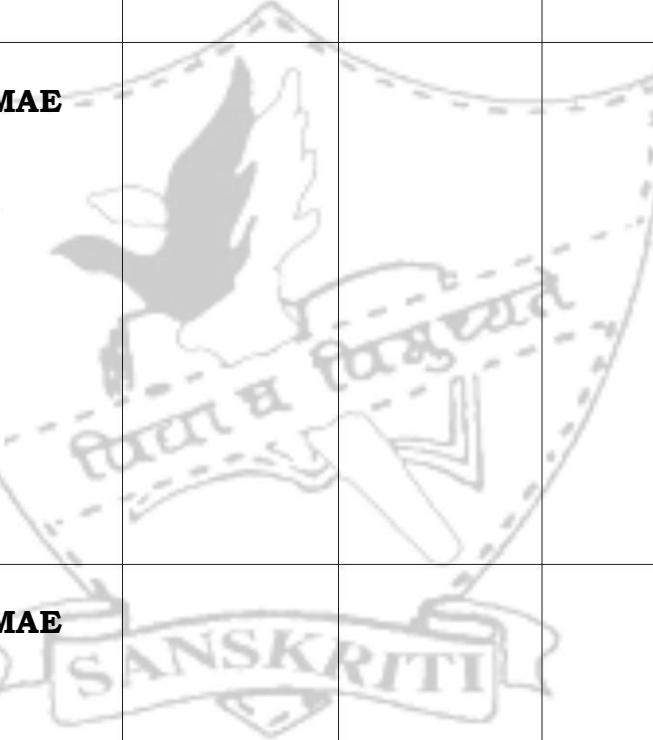
- Q7 What would happen if poultry birds are larger in size and have no summer adaptability? In order to get small size poultry birds, having summer adaptability , what method will be employed? 3
- Q8 Observe the following slides. It shows various types of connective tissues in animals. 5
- A) Identify the location of any two of these  
B) Differentiate on the basis of structure between any two of these.  
C) Differentiate on the basis of function between adipose tissue and blood

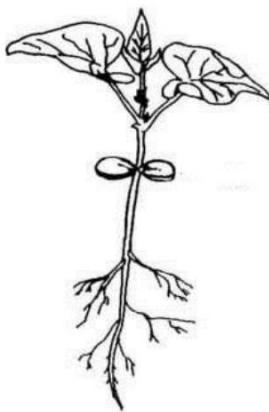


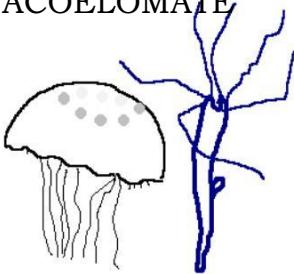
## Chapter 7:

**DIVERSITY IN LIVING ORGANISMS****DIVERSITY CHART**

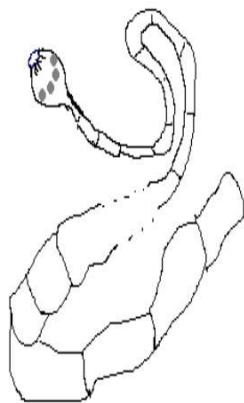
S No.	Organism	Identify specimen	Kingdom & / Division / Phylum	Two Characteristics : Kingdom / & Division / Phylum / Class
1.				
2.				
3.				

4.	<b>CRYPTOGAMAE</b> (spores) 			
5.	<b>CRYPTOGAMAE</b> 			
6.	<b>CRYPTOGAMAE</b> 			

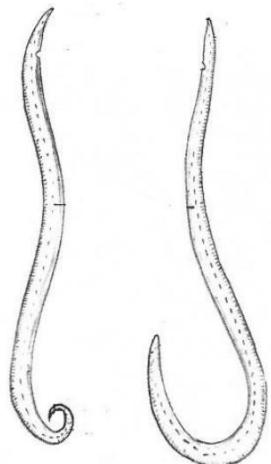
				
7.	<b>PHANEROGAMAE</b> (seed) 			
8.	<b>PHANEROGAMAE</b> 			

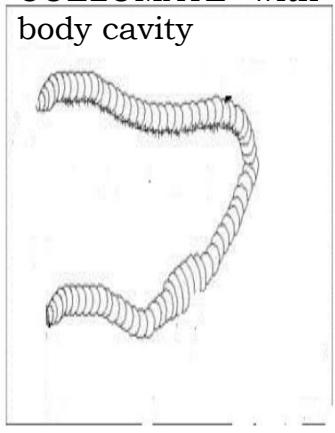
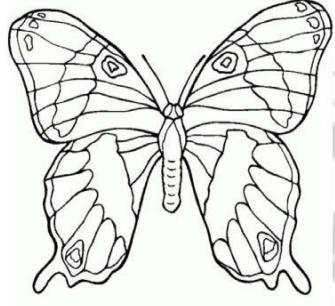
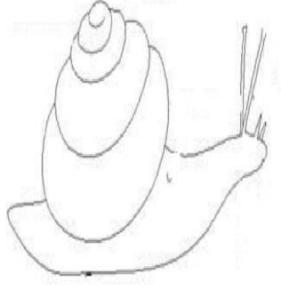
9.	<b>PHANEROGAMAE</b>			
10.				
11.	<b>ACOELOMATE</b>			

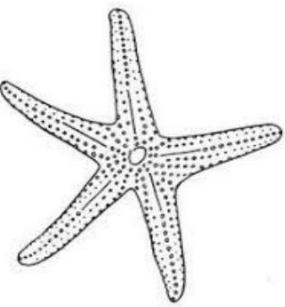
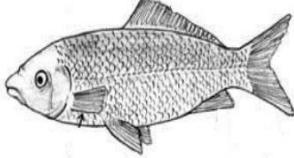
12. ACOELOMATE

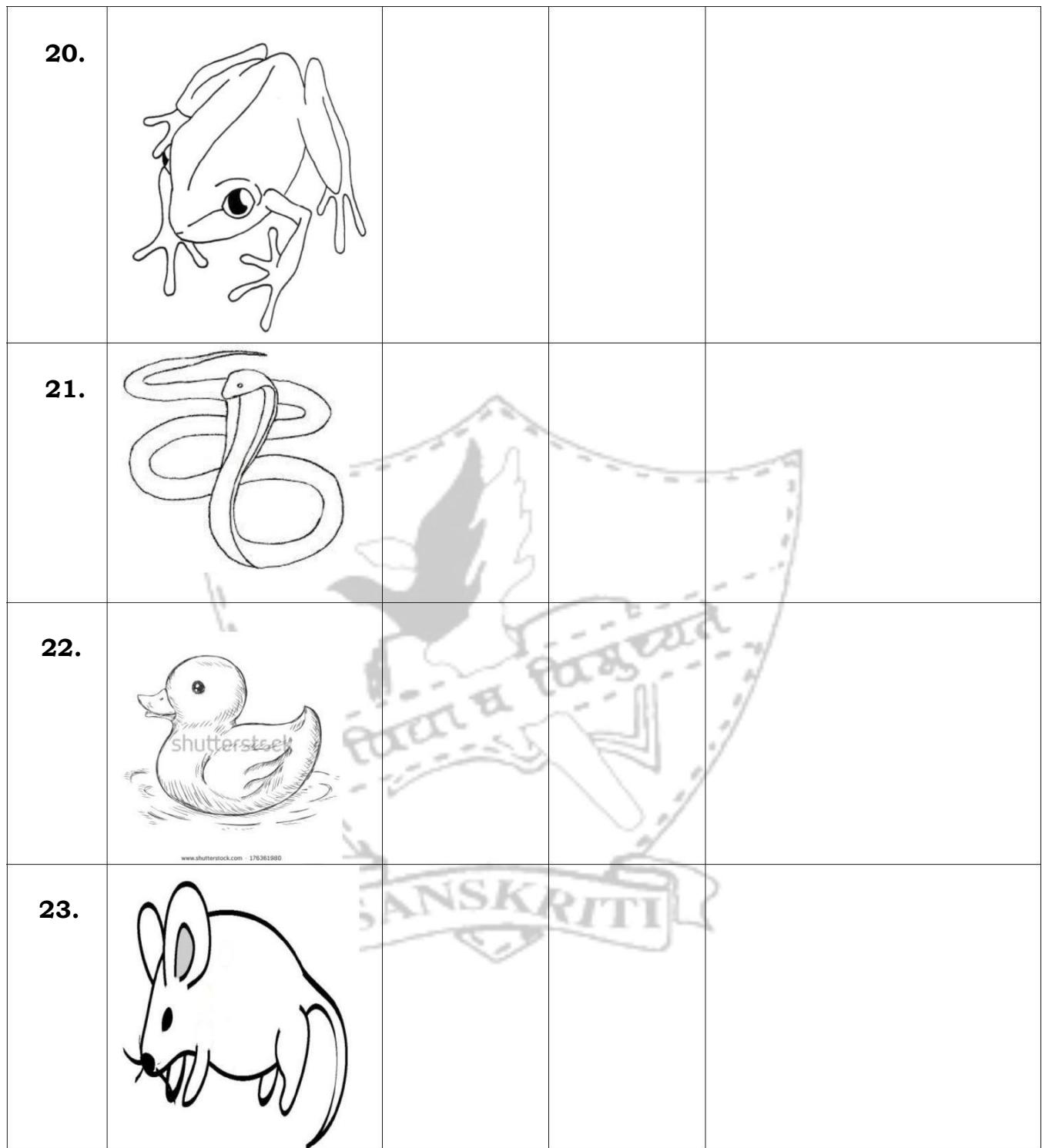


13. PSEUDOCOELOMATE



14.	COELOMATE- with body cavity 			
15.				
16.				

17.	NO NOTOCHORD 			
18.	NOTOCHORD 			
19.	NOTOCHORD replaced by Vertebral column 			



**Multiple choice questions based on the Chapter**

1. Which among the following has specialized tissue for conduction of water?  
a) Thallophyta    b) Bryophyta    c) Pteridophyta    d) b) and c)
2. Which among the following produce seeds  
a) Thallophyta    b) Bryophyta    c) Pteridophyta    d) Gymnosperm
3. Which among the following is known as the Amphibians of the plant kingdom  
a) Thallophyta    b) Bryophyta    c) Pteridophyta    d) Gymnosperm
4. Who proposed 5 kingdom classification  
a) Morgan    b) R. Whittaker    c) Linnaeus    d) Hackel
5. The origin of species is written by  
a) Darwin    b) R. Whittaker    c) Linnaeus    d) Hackel
6. Well defined nucleus is absent in  
a) Diatoms    b) Algae    c) blue green algae    d) Yeast
7. Pteridophyta do not have  
a) Roots    b) stem    c) flowers    d) leaves
8. Identify a member of porifera  
a) *Spongilla*    b) *Euglena*    c) *Penicillium*    d) *Hydra*
9. Which of the following is not a criterion for classification of living organisms  
a) Body design of the organism  
b) Ability to produce one's own food.  
c) Membrane bound nucleus  
d) Height of the plant
10. Corals are  
a) Poriferans attached to some solid support  
b) Cnidarians, that are solitary living.  
c) Poriferans present at the sea bed.  
d) Cnidarians that live in the colonies
11. Hard calcium carbonate structures are used as skeleton.  
a) Echinodermata    b) Protochordata    c) Arthropoda    d) Nematoda
12. Feature phylum of Arthropoda is  
a) Tube feet    b) Muscular feet    c) Jointed legs    d) Cilia

13. One phylum feature of Arthropoda is  
 a) Tube feet    b) Muscular feet    c) Jointed legs    d) Cilia

14. The locomotory organs of Echinodermata are  
 a) Tube feet    b) Muscular feet    c) Jointed legs    d) Cilia

15. Two chambered heart is present in  
 a) Crocodiles    b) Fish    c) Aves    d) Amphibians

16. Amphibians do not have the following  
 a) Three chambered heart    b) Gills and lungs    c) Scales    d) Mucus gland

17. Skeleton is made entirely of cartilage in  
 a) Sharks    b) Tuna    c) Rohu    d) None of the above

18. Notochord is found in  
 a) Echinodermata    b) Protochordata    c) Mollusca    d) None of the above

19. One of the following is not an Annelid  
 a) Neris    b) Earthworm    c) Urchins    d) Leech

20. Mammals have the following features  
 a) Hair on the body  
 b) External skeleton  
 c) Gills  
 d) Notochord

**Multiple choice questions based on Practical Syllabus Specimens**

- 1) The common feature that assigns Honey bee and Cockroach to the same phylum is:  
 a) Wings    b) Three pairs of legs  
 c) Jointed appendages                            d) Antennae
- 2) The Amphibians of the plant kingdom are  
 a) Bryophytes    b) Gymnosperm    c) Pteridophytes    d) Angiosperm

3) Neha observed the following under the microscope. Identify the organism and the group



- a) Fern; Pteridophytes b) Spirogyra; Algae  
c) Spirogyra; Fungi d) Moss; Bryophytes

4) Correct classification of Moss is:

- a) Kingdom : Plantae  
Sub Kingdom: Phanerogamae  
Division : Pteridophyta  
Class : Mosses
- b) Kingdom : Plantae  
Sub Kingdom: Cryptogamae  
Division : Pteridophyta  
Class : Mosses
- c ) Kingdom : Plantae  
Sub Kingdom: Cryptogamae  
Division :Bryophyta  
Class : Mosses
- d) Kingdom : Plantae  
Sub Kingdom : Cryptogamae  
Division : Thallophyta  
Class : Mosses

## Questions on Assertion and Reason

1. Assertion: Species is unit of classification.

Reason: There are many organisms in a species.

Choose the correct option

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

2. Assertion: R. Whittekar proposed five kingdom classification.

Reason: The criteria is Cell structure, mode of nutrition and body organization.

Choose the correct option

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

3. Assertion: Divisions Thallophyta , Bryophyta and Pteridophyta belong to the group Crptogamae.

Reason: The reproductive organs are inconspicuous.

Choose the correct option

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

4. Assertion: The organisms that belong to phylum Annelida has coelomic cavity.

Reason: The organisms in the phylum Annelida are well developed.

Choose the correct option

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

Chapter 13WHY DO WE FALL ILLAssignment : 13

Q1 a. What is a disease?

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b. Give common methods of transmission of diseases?

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Q2. Differentiate between Infectious and Non-infectious diseases?

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Q3. What are Infectious agents? Give example.

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Q4. Give the infectious agents and their names of the following diseases:

- a. Kala- azar
- b. Acne
- c. Sleeping sickness
- d. Peptic ulcer

Q5. What kind of disease will be called as chronic disease?

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Q6. What is the effect of the following on our health :-

- a. Acute disease.
- b. Chronic disease.
- c. Poor hygiene conditions.

Q7. What are Ulcers?

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Q8. Give reasons for the following :

- a. A drug will not work against microbes belonging to different groups.

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- b. Penicillin has different effect on Bacteria and Us?

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- c. If someone is suffering from cold and cough in the class, it is likely that the children sitting around will be exposed to the infection. But all of them do not actually suffer from the same.

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- d. Prevention is better than cure.

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Q9. What are pathogens?

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Q10. Give the common diseases caused by the following pathogens :

- a. Virus.
- b. Bacteria.
- c. Protozoan.
- d. Fungi

Q11. Write short notes on AIDS?

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Q12. Mark the statements true or false:

- a) Unhygienic conditions breed germs.
- b) People of all ages need to do the same amount of exercise.
- c) Antibiotics cure viral infections.
- d) A chronic disease lasts only for a short time.
- e) AIDS and syphilis spread by droplet infection.

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**Multiple choice questions based on the Chapter**

1.Which of the following is not a viral disease

- a)Dengue      b) AIDS      c) Thyroid      d)Influenza

2.Which of the following is not important for individual health

- a)Living in clean space  
b)Good economic condition  
c) Social equality and harmony  
d) Living in a large and well furnished house

3.Which disease is not transmitted by mosquitoes

- a)Dengue      b) malaria      c) Brain fever or encephalitis      d)pneumonia

4.Which of the following is not a viral disease

- a)Dengue      b) AIDS      c) Thyroid      d)Influenza

5. cannot be transmitted by

- a)Sexual contact      b) Hugs      c) Breast feeding      d)Blood transfusion

6.Which one of the following has a long term effect on the health of an individual?

- a)Common cold      b)Chicken pox      c) chewing tobacco      d)stress

7.Which one of the following causes kala-azar?

- a)*Ascaris*      b) *Trypanosoma*      c) *Leishmania*      d)Bacteria

8.Which one of the following disease is caused by protozoans

- a)Malaria      b) Influenza      c) AIDS      d)Cholera

9.Which of the following is not a viral disease

- a)Dengue      b) AIDS      c) Thyroid      d)Influenza

10.Viruses which cause hepatitis are transmitted through

- a)Air      b) water      c) food      d)personal contact

## Questions on Assertion and Reason

**1. Assertion:** Some diseases are non communicable.

**Reason:** Diseases are communicable by means of air, water and food due to the pathogens.

**Choose the correct option**

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



**2. Assertion:** Pathogens are disease causing organisms.

**Reason :** Pathogens get transferred from the infected person to the healthy person.

**Choose the correct option**

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



**3. Assertion:** Ventilation of air in the crowded area is important to prevent the spread of common cold and flu.

**Reason:** The concentration of infectious agents increases in the crowded places.

**Choose the correct option**

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



**4. Assertion:** Vaccines helps in immunization.

**Reason:** Vaccines do not help in strengthening of immune system.

**Choose the correct option**

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

**ACTIVITY- BASED ON RESEARCH**

Aim: Identify the diseases which had spread in your city/locality in the year 2019 due to mosquitoes.

Q1. List the name of the diseases and their cause.

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Q2.What steps will you take to prevent them from spreading?

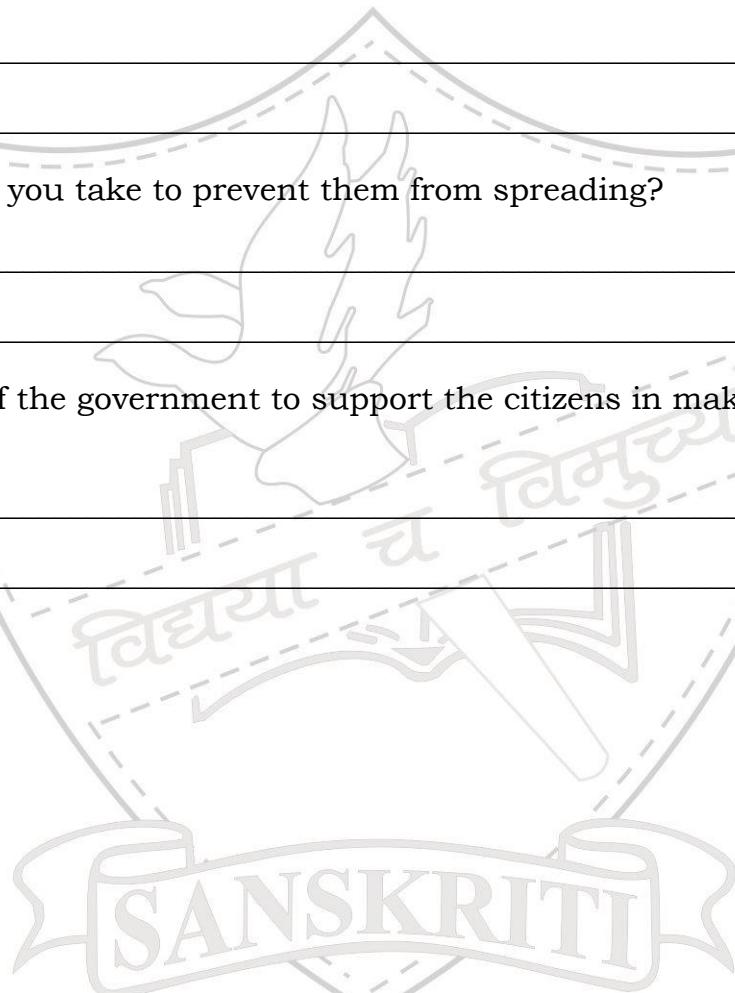
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Q3.State the role of the government to support the citizens in making the city disease free.

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Chapter 14NATURAL RESOURCESMineral riches in the soilBiogeochemical CycleAssignment No. 14

Q1. What is soil? How is soil formed?

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Q2. Life on earth will be affected if the top soil is removed. Justify.

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Q3. What are the causes of soil pollution?

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Q4. Define soil erosion. How does soil erosion affect agriculture?

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Q5. Give three ways by which soil erosion can be controlled.

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Q6. What do you mean by Biogeochemical Cycle?

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Q7. Draw water cycle. How does the removal of vegetation affect the water cycle?

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Q8. Draw the Nitrogen cycle.



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Q9. What are Nitrogen-fixing bacteria? Give examples.

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Q10. What is Green House Effect?

Multiple choice questions

- 1) Living organisms that help in the formation of the soil are  
a) Lichens b) Big trees c) Both the above d) None of the above
- 2) Humus  
a) makes the soil porous  
b) allows water and air to penetrate deep underground  
c) allows only water to enter the soil  
d) both a and b
- 3) Mineral nutrients found in a soil depends on  
a) its parent rock b) only top soil c) only sub soil d) none of the above
- 4) Nutrients used by the organisms during their life cycle are returned to the environment this can be understood by  
a) Biogeochemical cycles b) soil erosion c) Photosynthesis d) all of the above
- 5) Harmful UV rays of the sun are absorbed by  
a) Carbon dioxide b) Ozone c) Oxygen d) helium
- 6) One of the important gases that is responsible for the green house effect is  
a) CO<sub>2</sub> b) O<sub>2</sub> c) N<sub>2</sub> d) CO
- 7) Depletion of forests results in  
a) less rainfall b) soil erosion c) loss of fertility d) all of the above
- 8) Air contains maximum percentage of  
a) Nitrogen b) Oxygen c) Carbon dioxide d) Hydrogen
- 9) *Rhizobium* helps in  
a) Biological Nitrogen Fixation b) Photosynthesis c) Rainfall d) Both b and c
- 10) Biosphere includes  
a) Hydrosphere b) Lithosphere c) Atmosphere d) All of the above

### Questions on Assertion and Reason

1. Assertion: Green house effect leads to global warming.

Reason: Green house effect causes increase in the atmospheric temperature.

Choose the correct option

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

2. Assertion: Biogeochemical cycles are important for the nutrients to go back to the soil.

Reason: These cycles involves conversion of complex substances to the simple form.

Choose the correct option

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



Chapter 15IMPROVEMENT IN FOOD RESOURCESAssignment No. 15

Q1. Why is it essential to include cereals, pulses and oil in our food?

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Q2. Give two examples each of: cereals, pulses and oil seeds.

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Q3. Name two crops that are used as food for the livestock.

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Q4. Describe Kharif and Rabi crops. Give example of each of them.

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Q5. What are the three steps that help in improving crop yields?

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Q6. Name two methods for improving crop variety.

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Q7. Scientists have worked on improvement in the seed quality. Name six such factors for which variety improvement has been achieved.

Q8. Differentiate between:

a) Fertilizers and Manures.

b) Mixed Cropping and Inter Cropping.

Q9. What is organic farming?

Q10. Mention the various ways by which irrigation is achieved in India.

Q11. What are weeds? Give example and explain why they are harmful?

Q12. Write the factors responsible for the spoilage of grains. How can these be controlled?

Q13. What is Animal Husbandry?

Q14. Give the advantage of cattle husbandry.

Q15. Name the cattle variety:

- a) useful for long lactation period
- b) resistance to diseases.

Q16. Give the food requirement of dairy animals.

Q17. Mention the cross breeding programme with respect to the Poultry farming.

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Q18.What is broiler chicken?

Multiple choice questions

- 1) Sustainable agriculture involves  
a) Mixes Farming      b) Crop rotation    c) Both   d) None
- 2) Pisciculture is  
a) Bee Keeping      b) Fish Production    c) Pearl culture  
d) Broiler Production
- 3) Broilers are  
a) Ornamental fishes    b) Used for meat      c) Dairy products  
d) Used for Bee keeping
- 4) Sahiwal is a  
a) Cattle breed      b) Poultry breed    c) Dairy product   d) Fish
- 5) Weeds are  
a) Herbs      b) useful crops      c) harmful      d) both a and c
- 6) Selection of crop for rotation depends on  
a) Moisture conditions    b) Rainy season    c) Both   d) none
- 7) Legume crop is sown before a cereal crop to  
a) Have two crops in a year    b) improve the crop variety  
c) to maintain soil fertility   d) None of the above
- 8) Apiaries are  
a) place to keep apes    b) place to keep bees  
c) place to keep any living organism   d) all of the above
- 9) Aseel is an indigenous Fowl  
a) True      b) False      c) it is an exotic breed  
d) it is a type of fish
- 10) Pomphret is a marine fish  
a) False      b) True  
c) Pomphret is actually found in fresh and marine water both  
d) None of the above

### Questions on Assertion and Reason

**1. Assertion:** Fertilisers have important nutrients for the growth of the crops.

**Reason:** Fertilisers are very healthy for the soil.

**Choose the correct option**

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



**2. Assertion:** Ploughing helps to create air spaces in the soil.

**Reason:** Ploughing helps in mixing the nutrients in the soil.

**Choose the correct option**

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



**3. Assertion:** For irrigation sprinklers provides the right amount of water to the soil without any wastage.

**Reason:** Drip irrigation helps in the conservation of water.

**Choose the correct option**

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

**4. Assertion:** Animal husbandry is rearing of animals for their produce.

**Reason:** Animal husbandry involves proper hygiene and medical assistance.

**Choose the correct option**

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

Crossword Puzzle

Instructions:

- Solve the given puzzle with the help of clues provided and mark them at appropriate places inside the box.

V	E	R	M	I	C	O	M	P	O	S	T	I	N	G
O	F	I	R	Y	A	R	I	A	P	O	S	I	M	E
L	G	V	H	E	R	G	Y	R	A	F	Z	O	F	T
V	A	E	L	S	B	A	A	T	S	C	R	O	P	S
S	L	R	A	U	O	N	G	H	M	A	T	E	Y	U
B	G	L	I	M	N	I	L	E	L	S	Y	A	P	U
A	P	I	C	E	S	C	A	N	A	L	S	I	G	H
P	I	F	H	G	M	F	Q	I	P	U	Z	E	R	A
E	N	T	R	E	C	A	T	U	B	L	K	O	S	G
I	M	P	A	R	E	R	Y	M	R	I	G	A	L	S
B	A	R	K	L	O	M	B	S	O	P	U	S	G	M
F	M	L	W	R	T	I	P	A	T	E	S	E	T	A
G	U	R	K	D	I	N	V	U	D	A	L	E	H	T
R	E	P	R	T	A	G	U	R	N	S	I	L	C	E

## CLUES:

- Process of decomposition involving earthworm.(15)
- Farming system with minimal or no use of chemicals. (14)
- Indian variety of poultry. (5)
- An example of weed. (10)
- Water is drawn directly from rivers. (9)

**Value Based Questions (Practice Questions)**

1. During a field-trip some students visited an agricultural farm and saw a few birds eating earthworms. They enjoyed the scene and then they also started picking and killing the earthworms for pleasure. The farmer strongly objected and asked them to leave the field.
  - What could be the reason behind such a behavior of the farmer?
  - What values do you find missing in the student's behavior?
  - Which phylum do earthworm belong to?
  - Write two identifying features of earthworm.
2. Anshul is having a beautiful pet dog 'Ginger'. One day, he observed a small insect between his toes. He removed it carefully from the toe and observed it curiously as chapter titled 'Diversity In Living Organisms' was being taught in the school.
  - Identify the phylum to which the insect belong to.
  - Enlist any two characteristic features of this phylum.
  - Comment on Anshul's behavior.
3. Radhey was suffering from respiratory disorder since long time. His daughter Sarita took him to a doctor. After studying his case, the doctor came to know that
  - What could be the possible reason for Radhey's respiratory disorder?
  - Which major pollutants are present in exhaust of vehicles?
  - Write the preventive measures that should be taken.
4. In a school assembly, the students were asked to wear full sleeves shirts, full pants and socks pulled till knees, use mosquitoes repellants cream during day time.
  - Name the disease, about which preventive instruction are given in the assembly.
  - Name the vector of this disease.
  - Give two preventive environmental measures.
  - Which two values were given in assembly related to society?
5. Ram Avatar is a farmer residing on the outskirts of Delhi. Upon a visit to a fertilizer shop, the salesmen inquired of Ram Avatar of the crop he anticipated to cultivate in the coming season. During the conversation, the crop concerned was conveyed. The salesman suggested that urea and other nitrogenous fertilizer be used. Shreshth, quietly but keenly listening the conversation intervened and told Ram Avatar that for the concerned crop nitrogenous fertilizers shall not be required. Respond to the following questions using the information provided above:
  - What values are shown by Shreshth?
  - What can be the concerned crop possibly?
  - What can be the reason for Shreshth's suggestion?
6. A priest of temple collected dried garlands, holy old books and some statues. He asked his son to throw in the river. But instead of throwing, he buried them in the soil.
  - In the situation above, who wins your support: the priest or the son? Justify your answer by giving two reasons.
  - What are the values reflected in the behavior of son?

**TERM 2**  
**REVISION SHEET**

- 1 Name two diseases caused due to virus. 1

- 2 Name a Mammal that lays eggs. 1

- 3 Define the term triploblastic. Give one example. 1

- 4 Explain, What are Gymnosperms? Give one example of the plant. 1

- 5 Describe briefly, how do Antibiotics work? Does penicillin has any effect on our cells. Justify 2

- 6 Explain any two characteristics used for hierarchical classification of animals. 2

- 7 Briefly explain .What is Lichen? 2

- 8 Write a note on Cryptogams.

2

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- 9 Define immune system. Give reason, in a class of 30 students only couple of them suffer with cold.

2

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- 10 Who gave Binomial Nomenclature? Give the three rules that are followed for scientific naming of Organisms?

2

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11. Identify the phylum with the help of given features.  
i. Notochord, Bilaterally symmetrical.

3

- ii. Exoskeleton, jointed appendages, blood filled cavity.
- iii. Moist skin, respiration by lungs/skin, three chambered heart.

12 Explain briefly the following terms

5

- i. Communicable disease

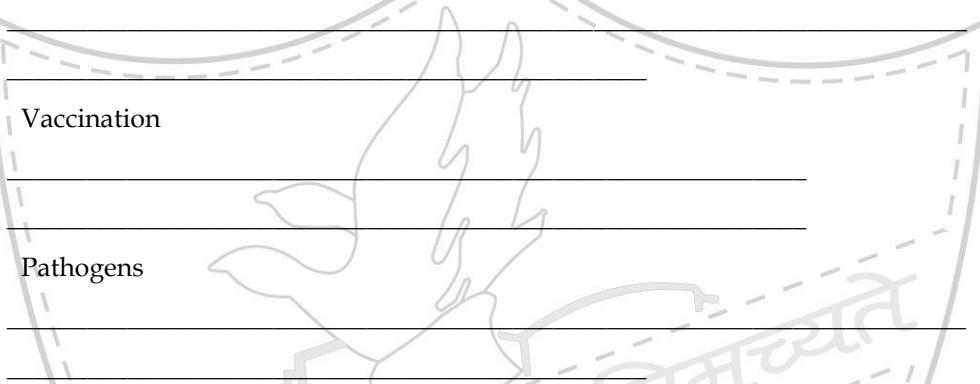
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- ii. Non infectious disease

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- iii. Vector



- iv. Vaccination

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- v. Pathogens

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1. The angiosperm plant is characterized by

- a) Presence of flower
- b) Seeds enclosed in a fruit
- c) Fibrous or tap root system
- d) Formation of spores

2. Mosquito is a

- a) Vector
- b) Carrier
- c) Pathogen
- d) Causative agents

## TERM 1

### PRACTICAL PORTION

#### EXPERIMENT No 1

- A. AIM:** To prepare a temporary slide of onion peel and observe the parts under the microscope.

#### Materials Required

Onion, slides, cover slips, watch glass, petri dish, forceps, needles, dropper, glycerine, blotting paper, blade/knife, safranin solution and a microscope.

#### Procedure

1. Take a medium sized onion, cut its outer surface with knife.
2. Use forceps to remove the peel of onion.
3. With the help of needle separate the small portion of epidermis (peel)
4. Keep dilute safranin solution in a watch glass.
5. Put this small peel in this watch glass with brush and allow it to stain for 3-5 minutes.
6. Transfer the stained peel to another watch glass that contains distilled water in it, to remove extra stain.
7. Take a clean dry slide and place two drops of water/glycerine on the centre of the slide.
8. Transfer the stained peel with needle and brush on the middle of the slide, if the peel curls straighten it and flatten it with brush and needle, do this gently.
9. With the help of blade cut the peel into a square shape.
10. Take a dry and clean coverslip and gently place it on the slide with the help of needle such that no air

#### Observations

The cells under observation are the plant cells. It consists of cell wall and large vacuoles. The nucleus is very prominent and is clearly visible.

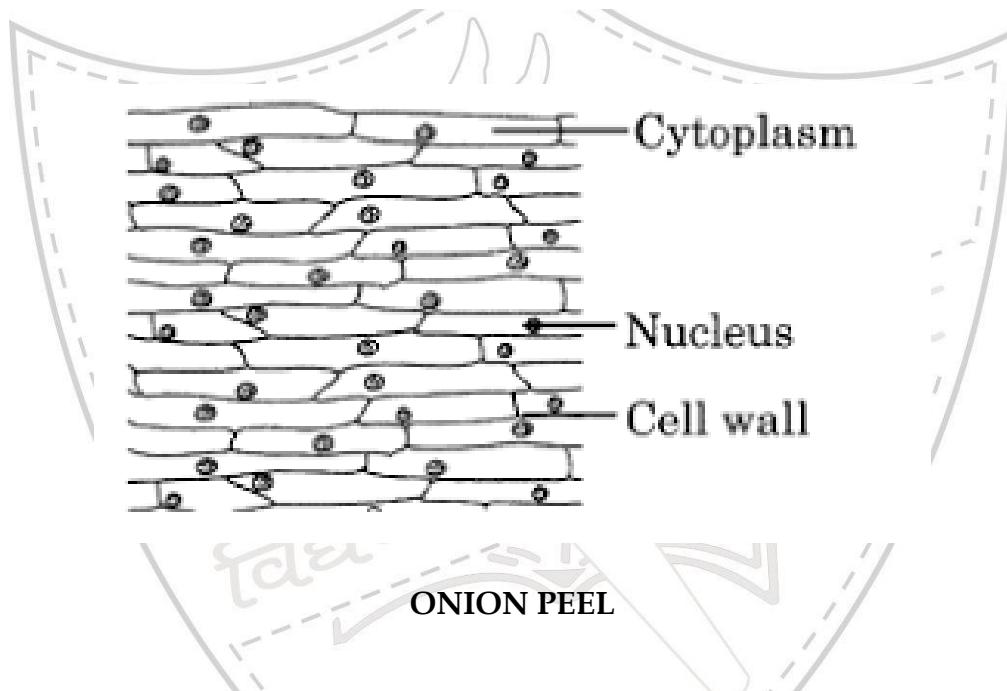
#### Inference

#### Plant cell shows the following:

1. It consists of cell wall.
2. The nucleus is prominent and present at the periphery of cytoplasm.
3. Large vacuoles are seen at the centre of the cell.
4. A lightly stained cytoplasm is present in the cell.

## Precautions

1. Use dilute stain for staining.
2. Avoid the formation of air-bubbles while placing the coverslip on the slide.
3. Take very thin peel of onion to get a single layer of cells, no overlapping of cells should be seen.
4. Use dry and clean slide, wipe out extra stain or water present on the sides of the slide.



**B. AIM:** To prepare a temporary slide of cheek cells and observe the parts under the microscope.

## Materials Required

Slide, coverslip, watch glass, methylene blue stain, blotting paper, toothpick, needle, dropper, brush, microscope and glycerine.

## Procedure

1. Make a dilute methylene blue solution in a watch glass.
2. Keep a clean slide with a drop of distilled water at the middle of the slide.
3. Take a clean/unused toothpick and scrap the inner wall of your mouth/cheek gently to obtain the epithelial animal tissue, (use the blunt side of toothpick)
4. Transfer the scrap on the middle of the glass slide and put a drop of methylene blue solution on it, to stain the cells.

5. After 2-3 minutes place the coverslip gently on the cheek cell with the help of needle and avoid the air bubble. (A drop of glycerine can be spread on the cheek cells, it is optional)
6. With the help of blotting paper remove the extra stain/water present on the slide.
7. Place the slide under microscope and observe it

### Observations

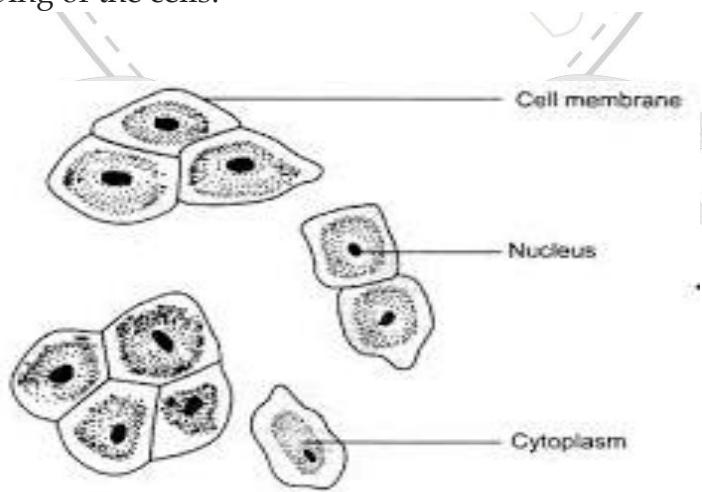
1. Cells with irregular shapes are seen.
2. A prominent nucleus is seen in the middle of the cell.
3. A thin membrane called plasma-membrane is visible at the boundary of each cell.
4. The cells do not show any intercellular space.
5. No big vacuoles and cell wall is seen.

### Inference

The cells observed under the microscope do not have cell wall and big vacuoles, these are the cells of animal.

### Precautions

1. Use unused/new toothpick for scraping of cheek cells.
2. Placing of coverslip should be done carefully to avoid air bubbles.
3. Avoid overstaining.
4. Use clean/dry mounted slide while placing it under the lens of the microscope.
5. Avoid overlapping of the cells.



**CHEEK CELLS**

**EXPERIMENT No 2****PLANT TISSUES**

**AIM:** To observe the given permanent slides under the microscope and identify parenchyma, collenchyma and sclerenchyma tissues in plants.

**Materials Required**

Permanent slides of parenchyma , collenchyma , sclerenchyma tissues, and compound microscope.

**Procedure**

1. Place the compound microscope where proper light can be received and reflected on the slide.
2. Place the permanent slides one by one. Observe its structure and draw diagrams.

**Precautions**

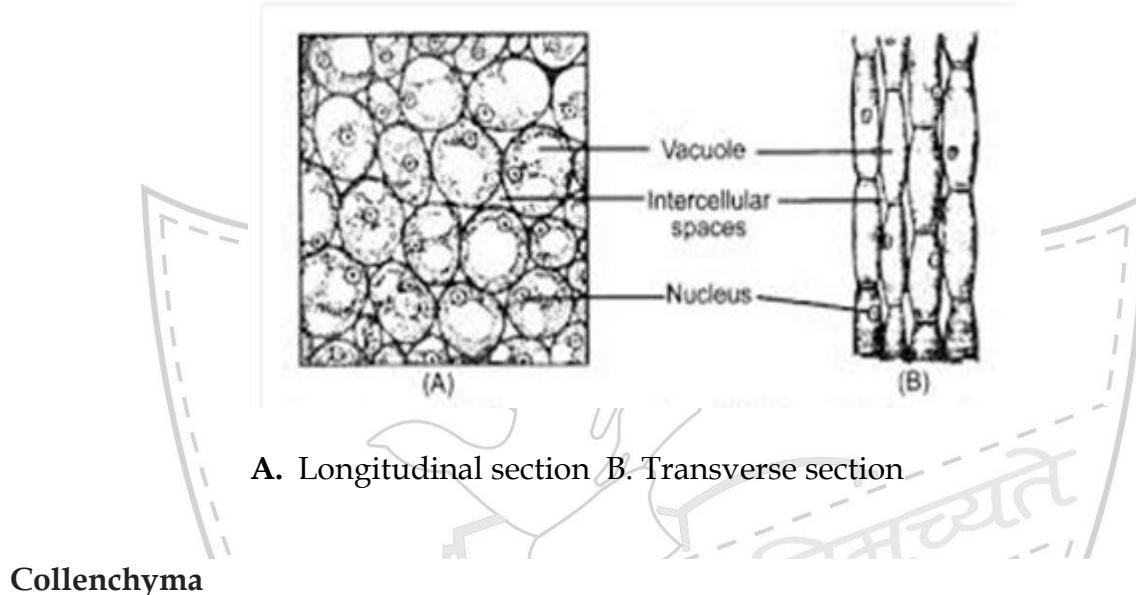
1. Handle the microscope carefully.
2. Handle the permanent slides carefully.
3. Always focus the slide first at low power and then at high power.

**OBSERVATIONS****Parenchyma****Features**

1. All cells are same in size and length.
2. Corners of the cells show intercellular spaces.
3. Each cell shows prominent nucleus and a large central vacuole.
4. Each cell has thin cell walls.
5. Intercellular spaces are present in between the cells

**Inference**

1. These are plant cells as large vacuole is seen and cell wall is present.
2. These are all living cells.
3. These cells are present all over the plant body i.e. – stems, leaves, roots, flowers and fruits

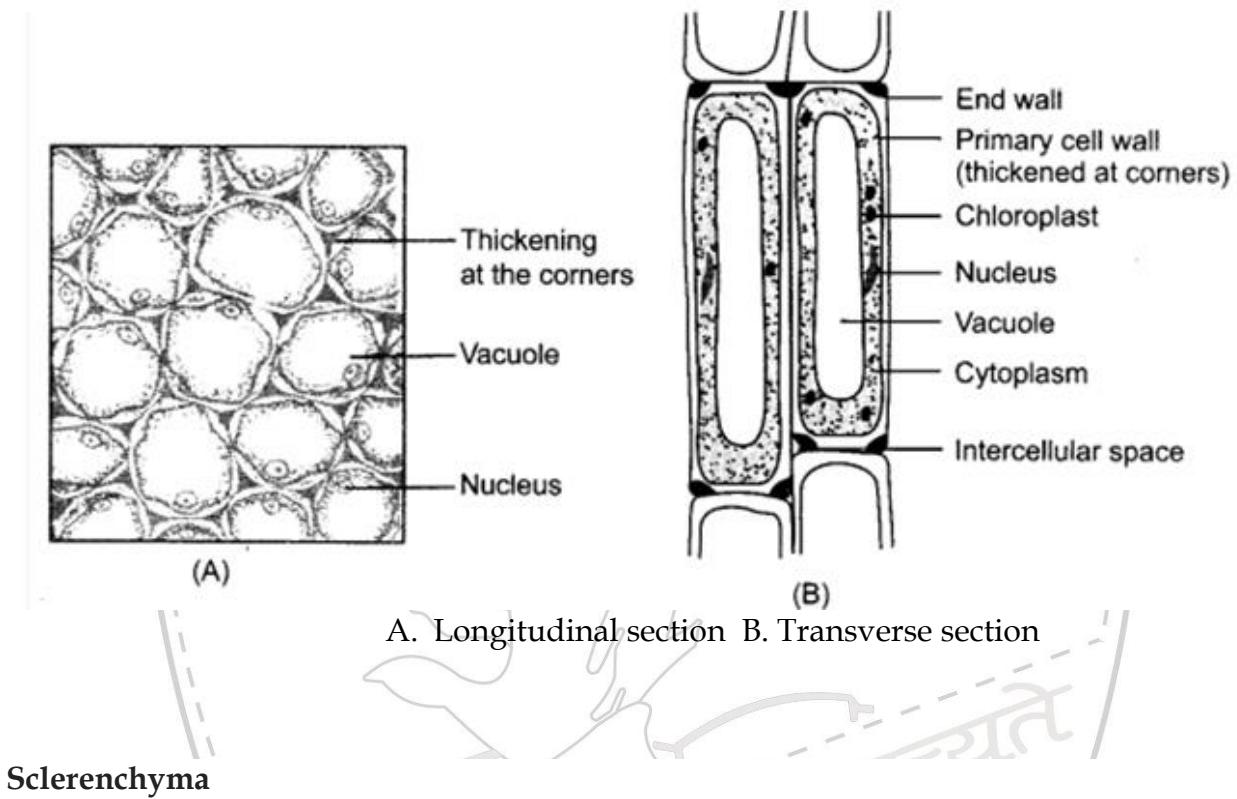


### Features

1. The cells of collenchyma may be oval or elongated.
2. Each cell consists of central nucleus with cytoplasm at the periphery.
3. Cell walls are thickened at the corners. The thickening is due to cellulose and pectin.
4. Intercellular space is absent.
5. These cells are commonly seen below the epidermis in petiole, leaves and stems.
6. Its main function is to provide mechanical strength

### Inference

1. These cells have thick corners.
2. There is no space between the cells.
3. The nucleus is prominent at the periphery with cytoplasm.
4. The centre of the cells consist of vacuole.

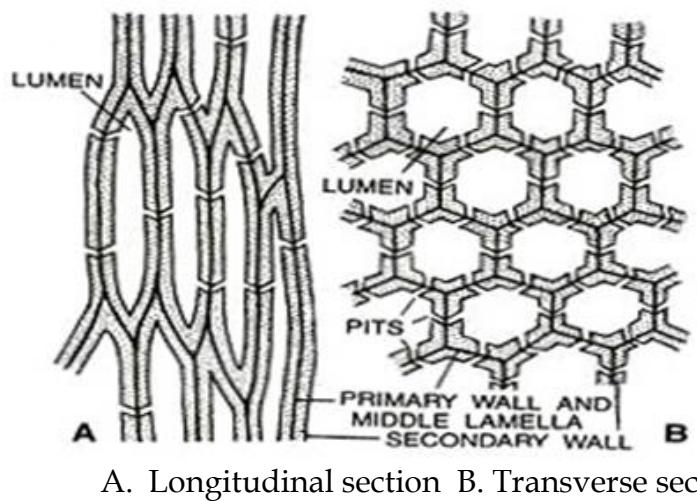


### Features

1. These cells show thick comers and thick cell walls.
2. They do not have any protoplasm in it.
3. They show lignified walls.
4. They can be divided into two types: sclerenchyma fibres and sclereids.
5. These cells are dead

### Inference

1. The sclerenchyma are dead cells with hard cell wall.
2. Provides mechanical support to plant. For eg coconut husk, hard shells of fruits



## EXPERIMENT No 3

## ANIMAL TISSUES

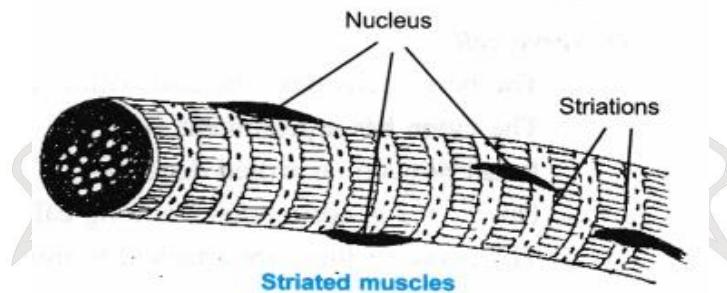
**AIM:** To observe the given permanent slides and identify striated muscle , unstriated muscle , cardiac muscle and nerve tissues in animals .

OBSERVATIONS**Striated muscles:**

1. These muscles show long cylindrical fibres.
2. The cells are multinucleated.
3. The muscles show alternate dark and light bands.
4. The cells are surrounded and held by connective tissue.
5. The cells are surrounded by a membrane called as sarcolemma.

**Inference**

1. The slide shows cylindrical fibres, with dark and light bands
2. These are voluntary muscles and work according to our will.



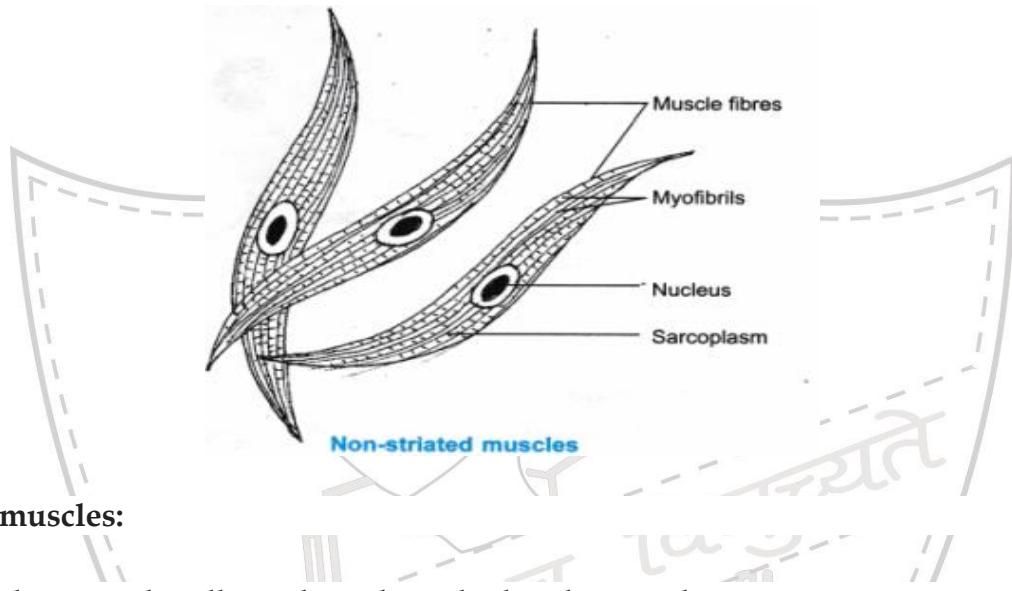
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**Non-striated muscles or Smooth muscles:**

1. The cells are spindle-shaped.
2. Nucleus is centrally located.
3. These muscles do not show dark and light bands striations.
4. Non-striated muscles are involuntary in nature.
5. They are found in blood vessels and in alimentary canal

### Inference

1. The cells of non-striated muscles are tapering at both the ends i.e., spindle-shaped.
2. The nucleus is prominent and is centrally located.
3. The dark and light bands are not seen.

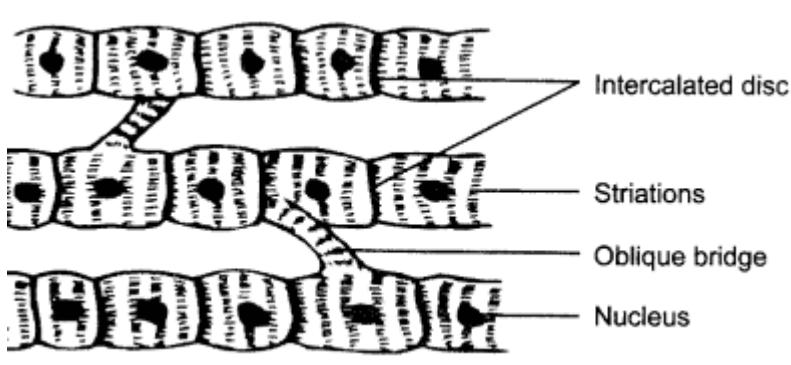


### Cardiac muscles:

1. Cardiac muscle cells are long, branched and uninucleate.
2. They show alternate light and dark bands.
3. These are involuntary muscles.
4. They are seen only in the walls of heart.
5. They are non-tiring muscles and responsible for rhythmic contraction and relaxation of heart muscles throughout life

### Inference

1. These cells are branched and each cell consist of single nucleus.
2. The striations are seen.

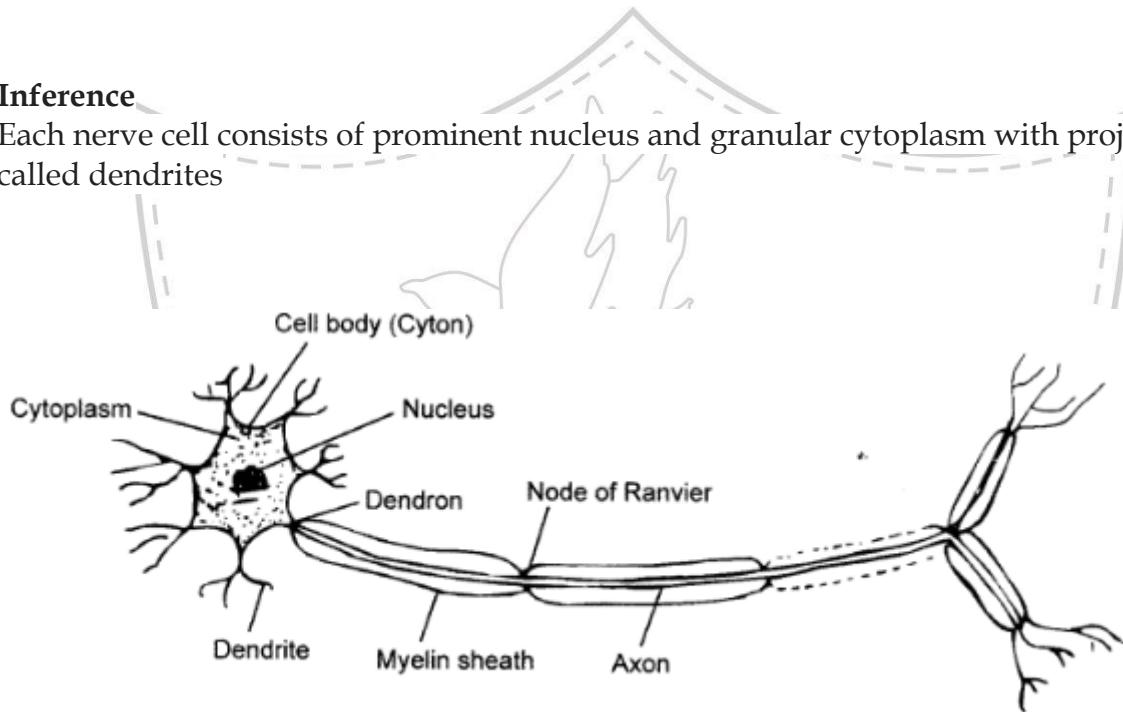


### Nerve cell:

1. The nerve cells has a neuron with a large body called cyton.
2. The cyton has a prominent nucleus.
3. It has projections called dendrites.
4. One of the dendrite which is long called axon.
5. The nerve endings are attached to muscles.

### Inference

Each nerve cell consists of prominent nucleus and granular cytoplasm with projections called dendrites



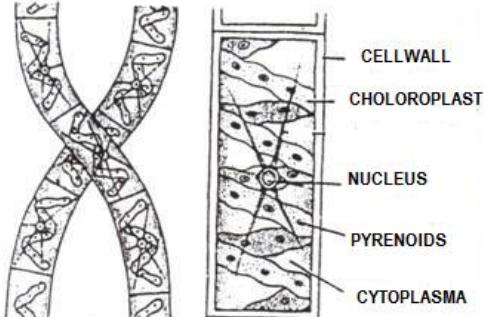
**TERM 2**  
**PRACTICAL WORK**

**EXPRIMENT NO 1**

**PLANT KINGDOM**

**Aim:** To study the characteristic of *Spirogyra*, *Agaricus*, Moss-Fern, *Pinus* and *Agaricus*. Draw and give identifying features of groups they belong to.

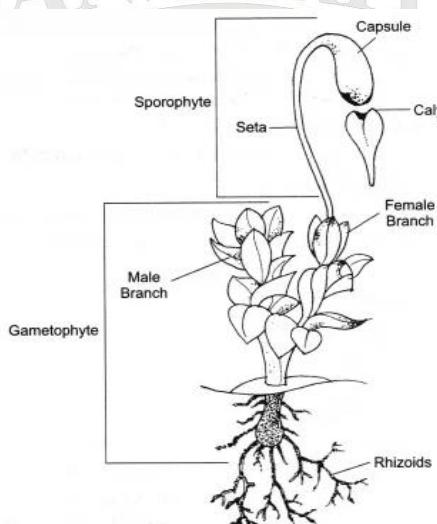
***Spirogyra* ( Division : Thallophyta)**



**Features**

1. Plant body is thallus
2. Commonly called algae
3. Are all aquatic plants
4. These algae make their own food by photosynthesis,  
eg. *Spirogyra*.

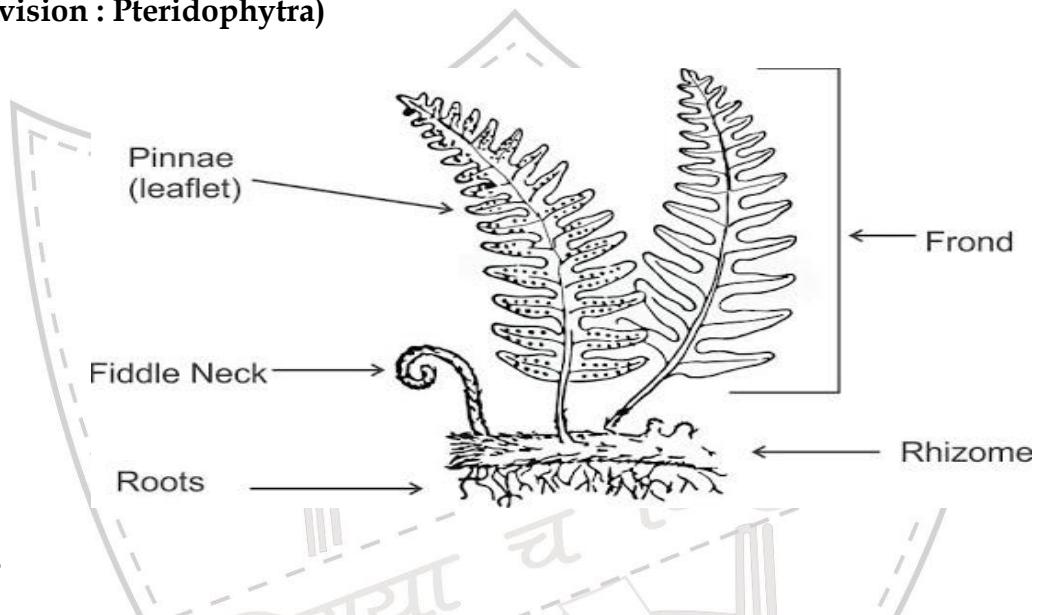
**Moss - Funaria ( Division: Bryophyta)**



## Features

1. Amphibian plants
2. Plant body is commonly differentiated into stem and leaf like structures.
3. No specialised vascular tissue for conduction of water and other substances.  
eg. Moss, Funaria.

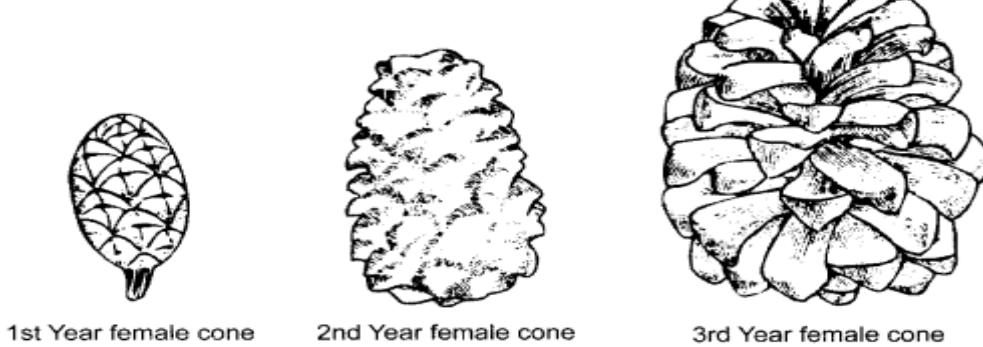
### Fern (Division : Pteridophyta)



## Features

1. Land plants with vascular tissues.
2. Plants body is differentiated into roots, stem and leaves.
3. These plants do not produce seeds.
4. Reproduce by spore, these are hidden hence called cryptogamae.  
eg Marsilea, Fern

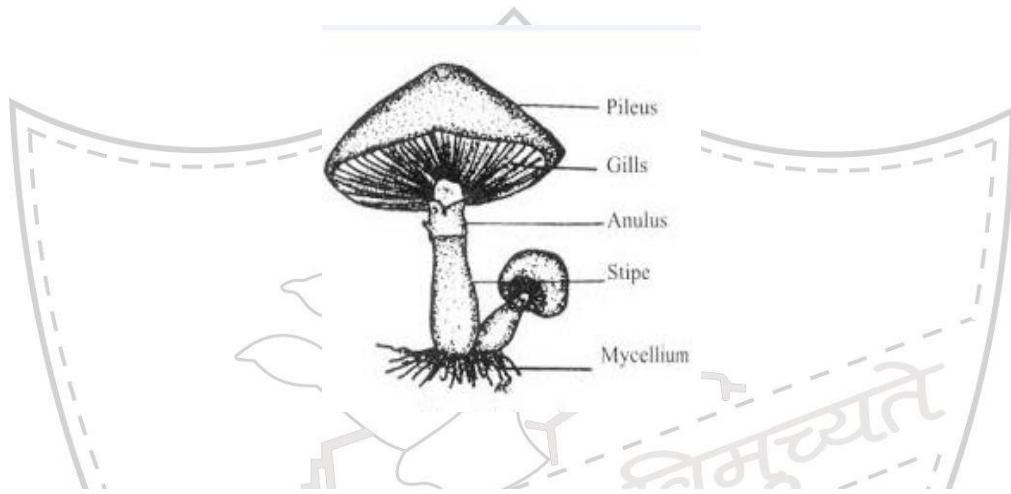
### Pinus ( Division - Gymnosperm)



## Features

1. These plants bear naked seeds.
2. Plants are evergreen, woody.
3. The flowers are unisexual cones on same plant.

### *Agaricus* ( Kingdom : Fungi)



## Features

1. *Agaricus* is commonly called mushroom, it is non-green.
2. It has a stalk and cap like structure with spores in it.
3. The spores germinate to form mycelium.
4. The cap on its lower sides has gills which bear spores.

## Identifying Features

1. The body is not divided into root, stem and leaves.
2. No chlorophyll present, nutrition is saprophytic.

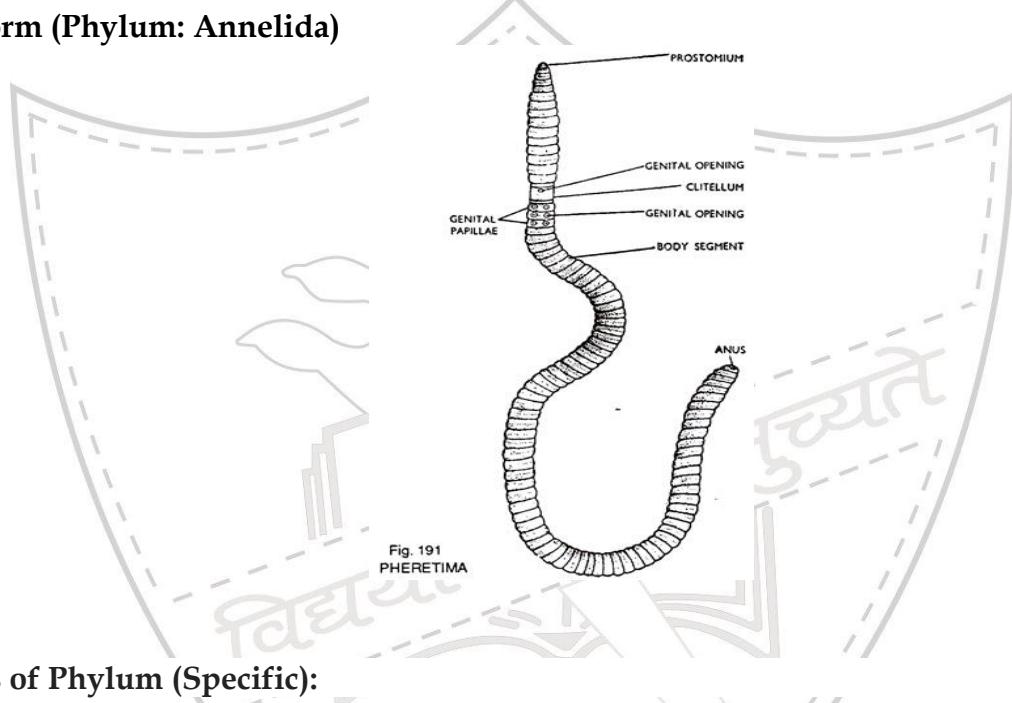
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## EXPERIMENT 2

### ANIMAL SPECIMEN

**AIM :** To observe and draw the given specimens – earthworm, cockroach, bony fish and bird. Write the features.

#### Earthworm (Phylum: Annelida)



#### Features of Phylum (Specific):

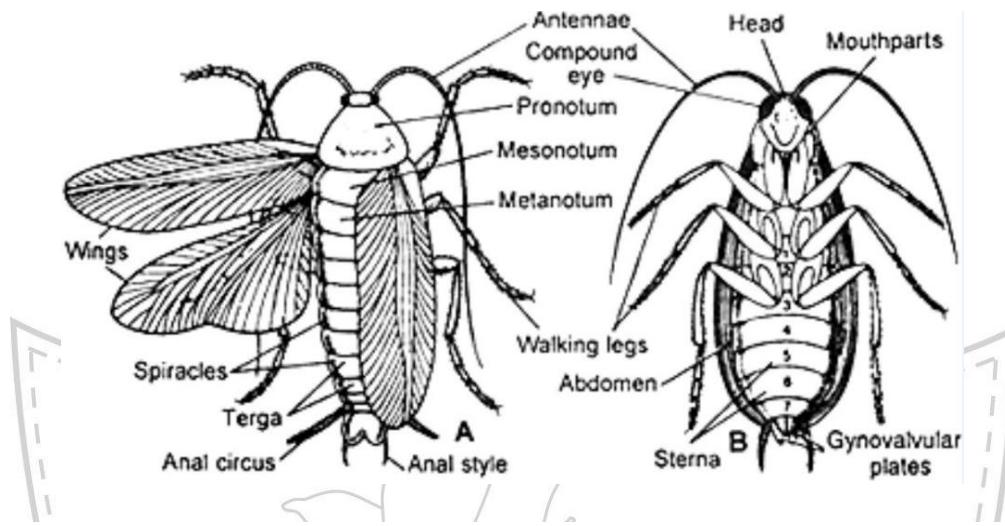
1. Body is segmented, segments are called metameres.
2. Skin is moist.
3. Chitinous setae, body wall muscles helps in locomotion.
4. After 13th segment clitellum (having reproductive parts) seen in earthworm (14-16 segment)

#### Adaptive Features

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1. Earthworm lives in soil by making burrows in it. The cylindrical body helps in pushing the body into the soil.
2. It feeds on soil and convert it into fertile soil hence called farmer's friend.
3. Skin is always kept moist with the help of mucus glands, so soil does not stick to the body and helps the worm to breathe through the skin.
4. It is hermaphrodite, both male and female genital pores are seen.
5. The segments on the body are called setae.
6. The brown colours helps it to camouflage with soil and protect from enemies.

### Cockroach( Phylum: Arthropoda, Class: Insecta)



#### Features of Phylum (Specific):

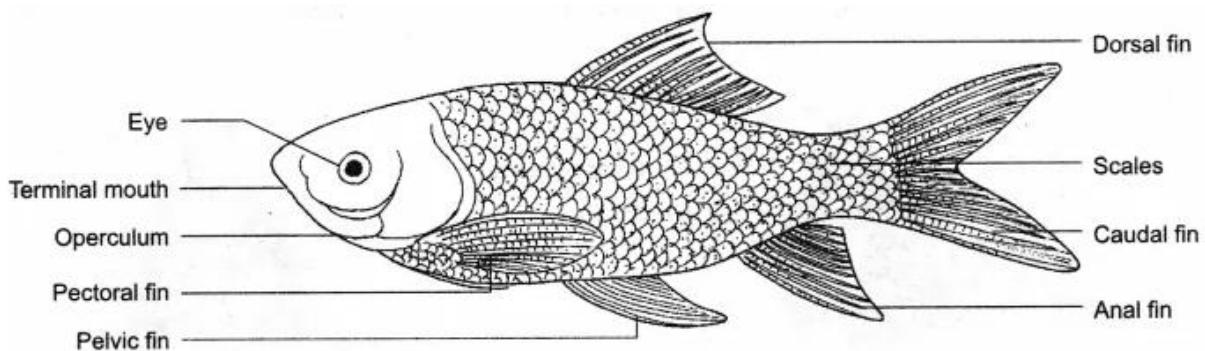
1. It possesses jointed legs.
2. The exoskeleton is made up of chitin.
3. They have compound eyes with mosaic vision.
4. The body is bilaterally symmetrical.
5. It is divided into three parts; head, thorax and abdomen.

#### Adaptive Features

1. The body is covered with thick cuticle and gives protection against enemies.
2. For locomotion, each body segment bears a pair of joint appendages (legs).
3. The holes (spiracles) present on the ventral side of thorax and abdomen helps in respiration.
4. It has movable antennae for sensing odour.
5. The head has compound eyes for vision.

### Fish (Phylum: Vertebrata, Class: Pisces)

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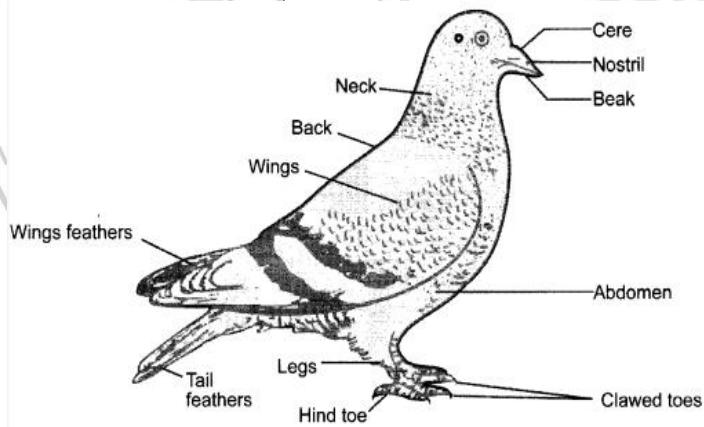
## Features of Phylum

1. It possesses a vertebral column.
2. Mouth is terminal, body is spindle shaped, strong vertebral column.
3. It has bony endoskeleton.
4. Gills covered by an operculum for respiration.
5. Air-bladder present which helps in giving buoyancy and float/swim in water.
6. Dorsal and pelvic fins help in balancing and movement in water and change directions.

## Adaptive Features

1. The body is streamlined which helps in swimming.
2. Fins are present (dorsal, pelvic, pectoral, and tail fins) for locomotion, balancing, and changing directions.
3. Body is covered with scales to protect against water decay.
4. Gills covered by operculum for respiration.

## Bird (Phylum: Vertebrata, Class: Aves)



## Features of Phylum and Class Aves

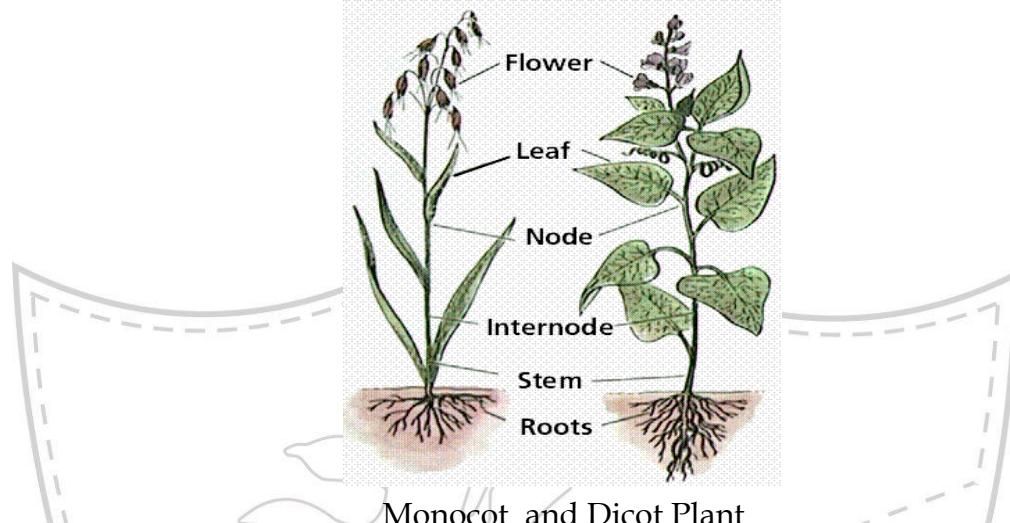
1. Birds have vertebral column.
2. Air cavities present in bones to make them light and give buoyancy
3. Body is streamlined, provides minimum resistance to air and helps in flying.
4. Fore-limbs modified into wings and mouth into beak.
5. The body is covered with feathers, provides insulation and keeps body warm.
6. Breathing through nostrils

## Adaptive Features

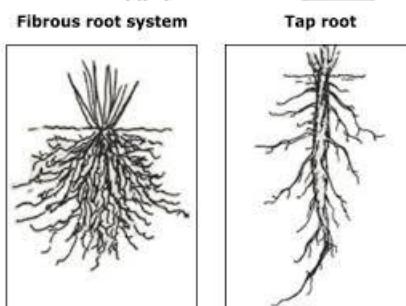
1. Streamline body helps in flying.
2. Long and hollow bones provides buoyancy.
3. Feathers provide insulation, maintain body temperature for warm-blooded birds.
4. Wings help in flying

### EXPERIMENT 3

**AIM** · To study the external features of root, stem, leaf and flower of monocot and dicot plants



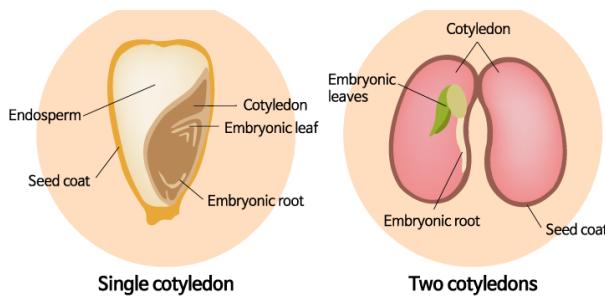
Monocot and Dicot Plant



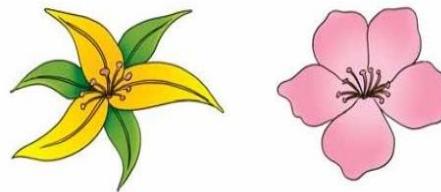
Roots in Monocot and Dicot Plant



Leaves of Monocot and Dicot Plant



Seeds of Monocot and Dicot Plant



Flowers of Monocot and Dicot Plant

**Difference between Parts of Monocot and Dicot Plants**

Character	Monocot Plant	Dicot Plant
Root	<ul style="list-style-type: none"> <li>Primary root is absent</li> <li>Adventitious root system</li> <li>Usually remain close to the soil surface.</li> </ul>	<ul style="list-style-type: none"> <li>Primary root with lateral branches is present.</li> <li>Tap root system</li> <li>Usually grow deep in the soil.</li> </ul>
Leaf	<ul style="list-style-type: none"> <li>Long and narrow shape</li> <li>Generally parallel venation</li> <li>Dorsal and ventral surfaces identical (Isobilateral)</li> </ul>	<ul style="list-style-type: none"> <li>Short and broad</li> <li>Generally reticulate venation</li> <li>Dorsal and ventral surfaces are different</li> </ul>
Stem	<ul style="list-style-type: none"> <li>Internodes are usually hollow</li> <li>Generally secondary growth(in thickness) is absent</li> </ul>	<ul style="list-style-type: none"> <li>Internodes are solid</li> <li>Generally secondary growth is present.</li> </ul>
Flower	<ul style="list-style-type: none"> <li>Floral parts are multiple of three (Trimerous)</li> <li>Sepals and petals are present</li> </ul>	<ul style="list-style-type: none"> <li>Floral parts are multiple of five (Pentamerous) and multiples of four (Tetramerous)</li> <li>Sepals and petals are present</li> </ul>
Seed	<ul style="list-style-type: none"> <li>One cotyledon is present called scutellum.</li> <li>Generally endospermic seed</li> </ul>	<ul style="list-style-type: none"> <li>Two cotyledons are present</li> <li>Generally non-endospermic seed</li> </ul>
Examples	Maize, Grass, Wheat, lily , Onion, Coconut and Banana	Pea, Gram, Rajmah (Beans), Mustard, Tamarind, Mint, China rose (Hibiscus) and Mango

NOTE: Year 2018-19 onwards the entire syllabus will be included in the Term 2 Paper

**Academic Session 2019 -20  
Second Term Examination  
Subject – Science**

**M/4/1**

**Time:** 3 Hrs.

**MM-80**

**General Instructions:**

1. The question paper comprises three sections – A, B and C. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion- reason type questions. They are to be answered in one word or in one sentence.
5. All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
6. All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
7. This question paper consists of a total of 30questions.

**SECTION A**

Q1	If the initial velocity of an object is equal to final velocity, the value of acceleration is (a) positive (b) negative (c) zero (d) infinite.	1
Q2	If a body is moving alone a constant speed, it may be assumed that (a) a net force is pushing it forward (b) the sum of only vertical forces is zero (c) the buoyant force is greater than gravity (d) the sum of all forces is zero.	1
Q3	In case of transverse waves the particles of a medium vibrate (a) in the direction of wave propagation (b) opposite to the direction of wave propagation (c) at the right angles to the direction of wave propagation (d) none of the above	1

- Q4 Alok is travelling to Vaishno devi on foot. He starts from the base of the mountain and the temple is at a distance of 5 km from the base and at a vertical height of 500 m. He also notes his uniform speed, distance and height from the base at regular intervals (shown in table). Alok weighs 50 kg. 1+1+1+1

Distance (m)	Height above the base of the mountain(m)	Uniform speed(m/s)
0-500	100	2
500-2000	250	3
2000-4000	450	1.5
4000-5000	500	0.5

1. Find the kinetic energy in the 500-2000 interval
2. Find his potential energy at the end of 2000-4000 interval.
3. How much work has Alok done against the gravity when he reaches the summit
4. State the law of conservation of energy.

- Q5 The atomic number of sodium is 11 and mass number is 23 .It has 1

- a) 11 neutrons and 12 protons
- b) 12 protons and 11 electrons
- c) 11electrons and 12 neutrons
- d) 12 electrons and 11neutrons

- Q6 The atomicity of  $K_2Cr_2O_7$  is 1
- a) 9
  - b) 11
  - c) 10
  - d) 12

- Q7 On suffering from high fever, which will lower your body temperature more, ice or ice cold water? 1

- Q8 How will you check the purity of a pure chemical compound in the solid state? 1

- Q9 Which of the following does not undergo sublimation? 1
- a) Camphor
  - b) Dry ice
  - c) Silica
  - d) Iodine

DIRECTION: For question numbers 10 and 11, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

1

- (a) Both A and R are true and R is correct explanation of the A.
- (b) Both A and R are true but R is not the correct explanation of the A.
- (c) A is true but R is false.
- (d) Both A and R are false.

Q10

Assertion (A): The value of acceleration due to gravity of earth does not depend upon mass of the body.

Q11

Reason (R): Acceleration due to gravity is a constant quantity.

1

Q12

Assertion (A): The molecular mass of Oxygen is 32u.

1

Reason (R) : The atomic mass of Oxygen is 16 u and oxygen is diatomic molecule.

Q13

Which of the following does not undergo sublimation?

1

- a) Camphor
- b) Dry ice
- c) Silica
- d) Iodine

Q14

Name the tissue that helps to increase the length of stem and root of the plant

1

Choose the correct option and write the complete sentence in your answer script

1+1+1+1

1. Which of the following is not a macro-nutrient

- a) Phosphorus
- b) Boron
- c) Nitrogen
- d) Carbon

2. Which of the following causes sleeping sickness

- a) *Ascaris*
- b) *Leishmania*
- c) *Trypanosoma*
- d) *Bacteria*

3. Five kingdom classification is given by

- a) Morgan
- b) Linnaeus
- c) R.Whittaker

- d) Haeckel
4. The basic unit of classification is
- Species
  - Order
  - Genus
  - Kingdom

### SECTION - B

Q15 a) How much work is done in moving an object by a force of 10N through a distance of 400cm in the direction of force. 3

b) A rocket is moving up with velocity  $v$ . If the velocity of the rocket is tripled suddenly, what will be the ratio of two Kinetic Energies

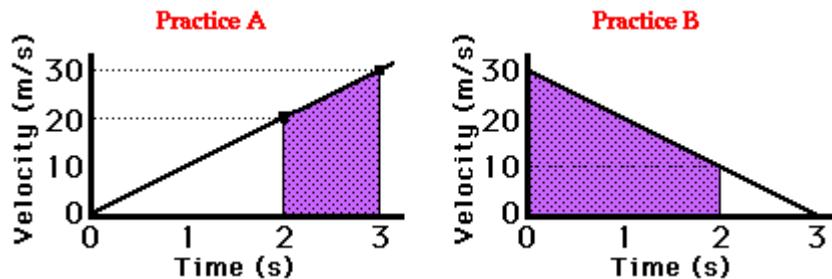
Q16 a) Why you get hurt while kicking a stone whereas when you kick a football it flies away. 3

b) How are seatbelts helpful while driving?  
c) Why does a ball rebound after striking a floor?

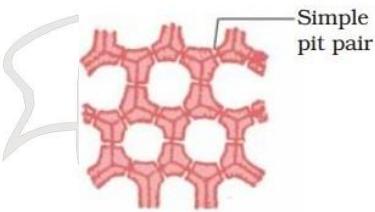
OR

a) Why does a passenger jumping out of a rapidly moving bus fall forward with his face downwards?  
b) Why is it difficult for a fireman to hose, which ejects large amount of water at a high velocity?  
c) Fruits fall off the tree when strong wind blows.

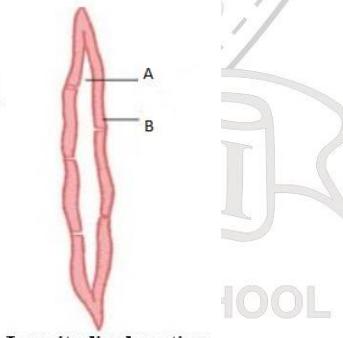
Q17 Determine the displacement of the object during the time interval from 2 to 3 seconds (Practice A) and during the first 2 second (Practice B). 3



Q18 Give reasons 3  
a) Ink spreads faster than honey in a beaker of water.  
b) Tyndall effect is shown by colloids.  
c) Crystallisation technique is better than Evaporation to separate the solid substances from their solutions.

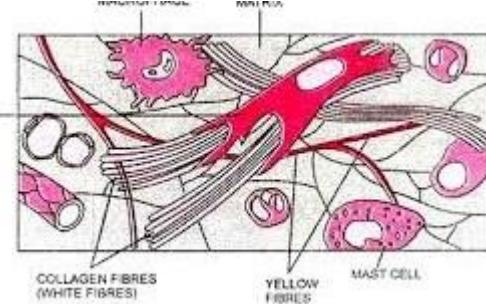
- Q19 A flask contains 4.4 g of  $\text{CO}_2$  gas. Calculate 3  
 a) How many moles of  $\text{CO}_2$  does it contain?  
 b) How many molecules of  $\text{CO}_2$  gas are present in the sample?  
 $(\text{C} = 12\text{U}, \text{O} = 16\text{U})$
- Q20 Explain in detail about the effect of change in temperature of water bodies on aquatic organisms? 3  
 OR  
 'Atmosphere is essential for life'. List three reasons in support of this statement.
- Q21 Read the following passage and answer the questions that follow— 3
- Process A** involves the division of body cells, while **Process B** involves the division of sex cells. The division of a cell occurs once in **Process A** but twice in **Process B**.
- Name process A and process B.
  - Mention **two** important functions of process A.
  - What is the number of cells formed after Process A and Process B?
- Q22 a) Define weathering. How does water help in weathering? 3  
 b) State the factors that decide
  - The soil structure
  - Mineral nutrients present in soil.
- Q23
- 

Transverse section



Longitudinal section
- Identify the plant tissue and mention its location.
  - What is B made up of and what function does it perform?
  - Which permanent tissue is responsible for flexibility in plants?

OR



- Identify the type and name the tissue shown in the diagram above.
- What function does the above tissue perform?
- Which connective tissue has great strength but limited flexibility?

Q24

Differentiate between the following (Give one point of difference)

3

- mixed cropping and inter cropping
- capture fisheries and culture fisheries
- milch and draught animals

### SECTION C

Q25

- What do you mean by relative density? If relative density of Mercury is 13.6, find its density in S.I. Units. (Given density of water  $1 \text{ g/cm}^3$ ).
- Sealed can of mass 600g has volume  $500\text{cm}^3$ , Will it float or sink in water if density of water is  $1000\text{kg/m}^3$ . Also find the mass of the water displaced by this can.

5

OR

- Derive a relationship between G and g.
- A ball is thrown up is caught by the thrower after 4 seconds.
  - With what velocity it was thrown?
  - Find the maximum height reached? ( $g=9.8\text{m/s}^2$ )

Q26

- What is SONAR? Write its working in brief.
- A person fires a gun standing at a distance of 55m from a wall. If the speed of sound is  $330 \text{ m/s}$ , find the time for an echo to be heard.

5

Q27

- Why is hydrogen not taken as standard for assigning the atomic mass to an element?
- Write the chemical formula of Ammonium phosphate and calculate its molecular mass. ( $\text{N}=14\text{U}, \text{H}=1\text{U}, \text{P}=31\text{U}, \text{O}=16\text{U}$ )
- Lithium has an elemental atomic mass of  $6.9 \text{ u}$  and has two naturally occurring isotopes,  ${}^6\text{Li}$  and  ${}^7\text{Li}$ . Their masses are  $6.01 \text{ u}$  and  $7.01 \text{ u}$  respectively. What are the natural abundances (to 2

5

decimal places in percentage) of the isotopes of Lithium?

- Q28 a) What are the postulates of Bohr's model of an atom . 5  
 b) Calculate the number of protons and neutrons present in the nucleus of an element 'X' which is represented as  $^{31}X_{15}$  .  
 c) Give the schematic atomic structure of Chlorine atom.

OR

- a) What are the observations and conclusions drawn from Rutherford's alpha rays scattering experiment?  
 b) For Aluminium, Z =13, A= 27 What are the number of protons and neutrons present in its nucleus.  
 c) Give the schematic atomic structure of fluorine atom.

- Q29 a) What is notocord? 1+2+2  
 b) Give two characteristic feature of the phylum Arthropoda.  
 c) Out of the various phyla under the animal kingdom, choose the one that fits the given description  
 i. Have dorsiventrally flattened body  
 ii. Holes are present all over the body  
 iii. Water driven tube system  
 iv. Mostly with shells , some are without shells

OR

- d) What is the binomial system of nomenclature?  
 e) Give two characteristic feature of the Division Pteridophyta.  
 f) Out of the various divisions under the plant kingdom, choose the one that fits the given description  
 i Amphibians of the plant kingdom  
 ii Plants bear naked seeds  
 iii Appearance of specialized conducting tissue  
 iv Seeds have two cotyledons

- Q30 a) Why overcrowded and poorly ventilated areas are major factors in the spread of air borne diseases? 1+2+2  
 b) An active immune system sends many cells to the affected tissue to kill off the disease causing microbes. Identify the process and mention its local and general effects?  
 c) State one differences between infectious and non-infectious diseases. Give one example of each.

**Academic Session 2019 -20  
Second Term Examination  
Subject - Science  
M/4/2**

**Time:** 3 Hrs.**MM-80****General Instructions:**

8. The question paper comprises three sections – A, B and C. Attempt all the sections.
9. All questions are compulsory.
10. Internal choice is given in each section.
11. All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion- reason type questions. They are to be answered in one word or in one sentence.
12. All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
13. All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
14. This question paper consists of a total of 30questions.

**SECTION A**

Q1	In case of transverse waves the particles of a medium vibrate (a) in the direction of wave propagation (b) opposite to the direction of wave propagation (c) at the right angles to the direction of wave propagation (d) none of the above	1
Q2	In case of transverse waves the particles of a medium vibrate (a) in the direction of wave propagation (b) opposite to the direction of wave propagation (c) at the right angles to the direction of wave propagation (d) none of the above	1
Q3	If the initial velocity of an object is equal to final velocity, the value of acceleration is (a) positive (b) negative (c) zero (d) infinite.	1

- Q4 Alok is travelling to Vaishnodevi on foot. He starts from the base of the mountain and the temple is at a distance of 5 km from the base and at a vertical height of 500 m. He also notes his uniform speed, distance and height from the base at regular intervals (shown in table). Alok weighs 60 kg.

1+1+ 1+  
1

Distance (m)	Height above the base of the mountain(m)	Uniform speed(m/s)
0-500	100	2
500-2000	250	3
2000-4000	450	1.5
4000-5000	500	0.5

- Find the kinetic energy in the 500-2000 interval
- Find his potential energy at the end of 2000-4000 interval.
- How much work has Alok done against the gravity when he reaches the summit
- State the law of conservation of energy.

- Q5 The atomic number of Argon is 18 and mass number is 40 .It has

1

- a)22 neutrons and 18 protons
- b) 20 protons and 20 electrons
- c) 20 electrons and 20 neutrons
- d) 22 electrons and 18 neutrons

- Q6 The atomicity of  $C_6H_{12}O_6$  is

1

- a) 12
- b) 24
- c) 3
- d) None of these

- Q7 What are the conditions necessary to liquefy gases?

1

- Q8 How will you check the purity of a pure chemical compound in the liquid state?

1

- Q9 Milk of Magnesia is

1

- a) A colloid
- b) A true solution
- c) A homogenous mixture
- d) A suspension

- DIRECTION : For question numbers 10 and 11, two statements are given- one labelled Assertion (A) and the other labelled

1

Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

- (a) Both A and R are true and R is correct explanation of the A.
- (b) Both A and R are true but R is not the correct explanation of the A.
- (c) A is true but R is false.
- (d) Both A and R are false.

Q10	Assertion (A) : The value of acceleration due to gravity of earth does not depend upon mass of the body. Reason (R) : Acceleration due to gravity is a constant quantity.	1
Q11	Assertion : The molecular mass of Oxygen is 32 amu. Reason : The atomic mass of Oxygen is 16 amu and oxygen is diatomic molecule.	1
Q12	The electronic distribution of Sulphur is a) 2,8,6 b) 2,6,8 c) 2,8,4 d) none of the above	1
Q13	Name the tissue that helps to increase the girth of the plant	1
Q14	Choose the correct option and write the complete sentence in your 1+1+1+1 answer script	1
	5. Which of the following is not a micro-nutrient e) Chlorine f) Calcium g) Manganese h) Boron	
	6. Which of the following causes kala-azar e) <i>Ascaris</i> f) <i>Leishmania</i> g) <i>Trypanosoma</i> h) <i>Bacteria</i>	
	7. Five kingdom classification is given by e) Morgan f) Linnaeus g) R.Whittaker h) Haeckel	
	8. The basic unit of classification is e) Species	

- f) Order
- g) Genus
- h) Kingdom

**SECTION B**

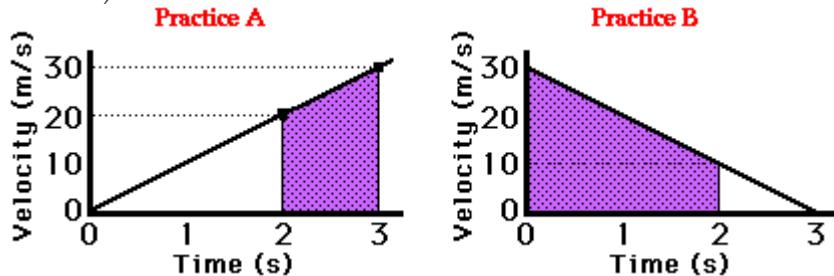
**Q15**      a) How much work is done in moving an object by a force of 20N through a distance of 400cm in the direction of force?      3  
 b) A rocket is moving up with velocity  $v$ . If the velocity of the rocket is doubled suddenly, what will be the ratio of two Kinetic Energies.

**Q16**      a) Why does a passenger jumping out of a rapidly moving bus fall forward with his face downwards?  
 b) Why is it difficult for a fireman to hose, which ejects large amount of water at a high velocity?  
 c) Fruits fall off the tree when strong wind blows.

OR

- a) Why you get hurt while kicking a stone whereas when you kick a football it flies away.
- b) How are seatbelts helpful while driving?
- c) Why does a ball rebound after striking a floor?

**Q17**      Determine the displacement of the object during the time interval from 2 to 3 seconds (Practice A) and during the first 2 second (Practice B).      3



**Q18**      Give reasons      3

- a) A small quantity of water in a kettle on boiling can fill a kitchen with steam.
- b) Tyndall effect is not shown by true solutions.
- c) Crystallisation technique is better than Evaporation to separate the solid substances from their solutions.

**Q19**      A flask contains 4.4 g of  $\text{CO}_2$  gas. Calculate      3  
 a) How many moles of  $\text{CO}_2$  does it contain?

b) How many molecules of  $\text{CO}_2$  gas are present in the sample?  
 $(\text{C} = 12\text{U}, \text{O} = 16\text{U})$

Q20 Explain in detail about the effect of change in temperature of water bodies on aquatic organisms? 3

OR

'Atmosphere is essential for life'. List three reasons in support of this statement.

Q21 Read the following passage and answer the questions that follow— 3

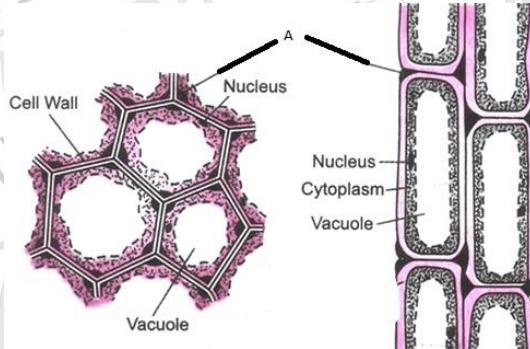
**Process A** involves the division of body cells, while **Process B** involves the division of sex cells. The division of a cell occurs once in **Process A** but twice in **Process B**.

- d. Name process A and process B.
- e. Mention **two** important functions of process A.
- f. What is the number of cells formed after Process A and Process B?

Q22 a) What is Greenhouse effect and why is it called so ? 3

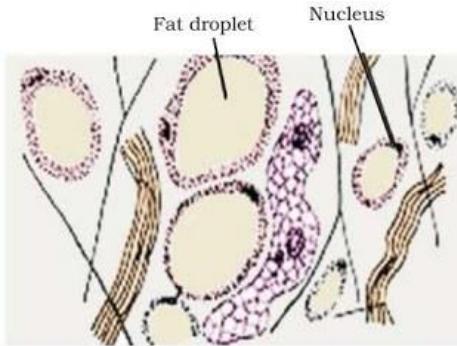
- b) Does it contribute to Global Warming ? Why / Why not ?

Q23



- d) Identify the plant tissue and mention its location.
- e) In the above diagram, name the part labelled as A. What function does it perform ?
- f) Which permanent tissue is responsible for making the plants hard and stiff?

OR



D) Identify the type and name of the tissue shown in the diagram above.

E) What function does the above tissue perform ?

F) Which tissue is responsible for transmitting stimulus within the body?

Q24

Differentiate between the following

3

- d) mixed cropping and inter cropping
- e) capture fisheries and culture fisheries
- f) milch and draught animals

### SECTION C

Q25

- a) What do you mean by relative density? If density of Gold is 19.3, find its Relative density in S.I. Units. (Given density of water 1 g/cm<sup>3</sup>).
- b) Sealed can of mass 600g has volume 400cm<sup>3</sup>, Will it float or sink in water if density of water is 1000kg/m<sup>3</sup>. Also find the mass of the water displaced by this can.

5

OR

- c) Derive a relationship between G and g.
- d) A ball is thrown up is caught by the thrower after 6 seconds.
  - iii) With what velocity it was thrown?
  - iv) Find the maximum height reached? ( $g=9.8\text{m/s}^2$ )

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- ii) A person fires a gun standing at a distance of 110m from a wall. If the speed of sound is 330 m/s, find the time for an echo to be heard.

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Q27

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- b) Write the chemical formula of Ammonium sulphate and calculate its molecular mass. ( N=14u, H=1u, S=32u , O= 16u)
- c) Lithium has an elemental atomic mass of 6.9 u and has two naturally occurring isotopes, <sup>6</sup>Li and <sup>7</sup>Li. Their masses are 6.01 u and 7.01 u respectively. What are the natural abundances (to 2 decimal places in percentage) of the isotopes of Lithium?

5

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f) State one difference between acute and chronic diseases.  
Give one example for each