SMARTSKILLS

2021-22

CLASS IX

BIOLOGY

CONTENTS

COURSE STRUCTURE CLASS IX
(Annual Examination) Marks: 80

Unit No.	Unit	Marks	Periods
I	Matter - Its Nature and Behaviour	23	50
II	Organization in the Living World	20	45
III	Motion, Force and Work	27	60
IV	Our Environment	06	15
V	Food; Food Production	04	10
	Total	80	
	Internal assessment	20	
	Grand Total	100	

Theme: Materials

(50 Periods)

Unit I: Matter-Nature and Behaviour
Definition of matter; solid, liquid and gas; characteristics - shape, volume, density; change of state- melting (absorption of heat), freezing, evaporation (cooling by evaporation), condensation, sublimation.
Nature of matter: Elements, compounds and mixtures. Heterogeneous and homogenous mixtures, colloids and suspensions.
Particle nature and their basic units: Atoms and molecules, Law of constant proportions, Atomic and molecular masses. Mole concept: Relationship of mole to mass of the particles and numbers.
Structure of atoms: Electrons, protons and neutrons, valency, chemical formula of common compounds. Isotopes and Isobars.

Theme: The World of the Living (45 Periods)
Unit II: 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 and cell inclusions; 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 (only four types of tissues in animals; Meristematic and Permanent tissues in plants).

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: Moving Things, People and Ideas (60 Periods)

Unit III: Motion, Force and Work

Motion: Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and uniformly accelerated motion, derivation of equations of motion by graphical method; elementary idea of uniform circular motion.

Force and Newton's laws : Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Elementary idea of conservation of Momentum.

Gravitation: Gravitation; Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Free fall.

Floatation: Thrust and Pressure. Archimedes' Principle; Buoyancy; Elementary idea of Relative Density. Work, energy and power: Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy.

Sound: Nature of sound and its propagation in various media, speed of sound, range of hearing in humans; ultrasound; reflection of sound; echo and SONAR. Structure of the Human Ear (Auditory aspect only).

Theme: Natural Resources: Balance in nature (15 Periods)

Unit IV: 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-geo chemical cycles in nature: Water, Oxygen, Carbon and Nitrogen

Theme: Food (10 Periods)

Unit V: Food Production

Plant and animal breeding and selection for quality improvement and management; Use of fertilizers and manures; Protection from pests and diseases; Organic farming.

PRACTICALS IN BIOLOGY (30 Periods)

1. Preparation of stained temporary mounts of (a) onion peel, (b) human cheek cells & to record observations and draw their labeled diagrams. Unit-II

2. Identification of Parenchyma, collenchyma and Sclerenchyma tissues in plants, striped, smooth, and cardiac muscle fibers and nerve cells in animals, from prepared slides. Draw their labeled diagrams. Unit-II

3. Study of the characteristics of *Spirogyra, Agaricus*, Moss, Fern, Pinus (either with male or female cone) and an Angiospermic plant. Draw and give two identifying features of the groups they belong to. Unit-II

4. Observe the given pictures/charts/models of earthworm, cockroach, bony fish, and bird. For each organism, draw their picture and record: Unit-II

a) one specific feature of its phylum.
b) one adaptive feature with reference to its habitat.

5. Study of the external features of root, stem, leaf and flower of monocot and dicot plants. Unit-III

Month Wise Syllabus (2021-22)

Term 1
April 2021 Chapter 6: Fundamental Unit of Life
June 2021 Chapter 5: Fundamental Unit of Life (Contd.)
July 2021 Chapter 6: Tissues
August 2021 Chapter 15: Improvement in Food Resources
September: Revision Term 1 First Term Exam
Term 2
October 2021 Chapter 14: Natural Resources (Mineral Riches in the soil & Biogeochemical Cycles)
November 2021 Chapter 7: Diversity in Living Organisms
December 2021 Chapter 7: Diversity in Living Organisms (Contd.)
January 2022 Chapter 13: Why Do We fall Ill?
February 2022 Revision for Annual Exams Annual Exams

CHAPTER 5

THE FUNDAMENTAL UNIT OF LIFE

Learning Outcomes:

Students will be able to understand	what are cells, structure of cell and the content of the cell?	After completing the chapter and attempting from SS Q1 to Q5
Students will be able to understand	the concept of diffusion and Osmosis	After completing the chapter and attempting from SS Q6 to Q 9
Students will be able to identify the difference between	a. Prokaryotic and Eukaryotic cells b. Plant and animal cells.	After completing the chapter and attempting from SS Q10 to Q12
Students will be able to learn	the functions of cell organelles	After completing the chapter and attempting from SS Q 13 to Q17
Students will be able to draw	the structure of plant and animal cells.	After completing the chapter and attempting from SS Q 18
Students will be able to understand , reason and select	the correct option	After completing the chapter and attempting from SS MCQ based on theory and practical
Students will be able to analyze and select	the correct options	after completing the Assertion –reason and paragraph-based questions

Assignment: 5.1

Q.1.Match the following:

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

Q2 Double Matching

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.

Q 3. Expand: RER, SER, DNA, RNA and ATP

1. _____
2. _____
3. _____
4. _____
5. _____

Q 4. Shape and size of cells are related to the function they perform. Explain with example.

_____

_____

Q 5. A special process helps in the intake of oxygen inside the cells and release of carbon dioxide from the cells. Name the process.

_____

Q.6. Name the three types of plastids and the functions they perform.

_____

_____

Q 7. Name the two organelles that have their own genetic material

_____

Q 8. Amoeba is able to engulf its food due to the flexibility of the cell membrane. What is this process called as?

_____

Q9. 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 behavior of the three membranes.

_____

_____

_____

_____

_____

Q10. Differentiate between plant cell and animal cell based on: Cell wall, vacuole and plastids.

_____

_____

_____

_____

_____

Q11. Give the functions of the following (in one line)

a) Cell wall

b) Cell membrane

c) Nucleus

d) Mitochondria

e) Golgi apparatus

f) Lysosomes

g) Plastids

h) SER

i) RER

j) Ribosomes

Q12. State one similarity in structure between mitochondria and plastids.

Q13. Name the substances stored in Vacuole.

Q14.What percentage of plant cell volume does the central vacuole occupy?

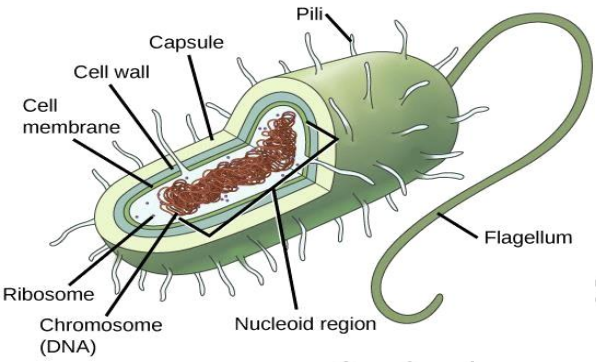
Q15. Why does the skin of your fingers shrink when you wash clothes for a long time?

Q16. Which kind of plastid is present in:

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

WORKSHEET

Study the diagram and answer the following questions:



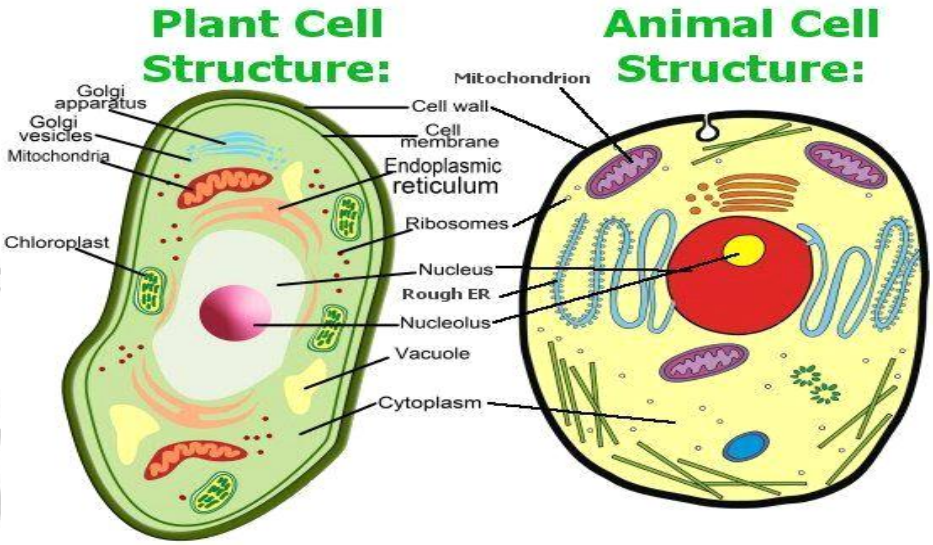
Q1. Identify and name the given structure.

Q2. Write two identifying features of the given structure which are different from the animal cell.

Q3. What is a nucleoid?

Q4. Give function of Flagellum.

Q5. 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 table.



S.No	Found in plant cells only	Found in animal cells only	Found both in plant and animal cells

Assignment No. 5.2

Multiple choice questions from the chapter

1. The undefined nuclear region of prokaryotes is 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

Assignment No. 5.3

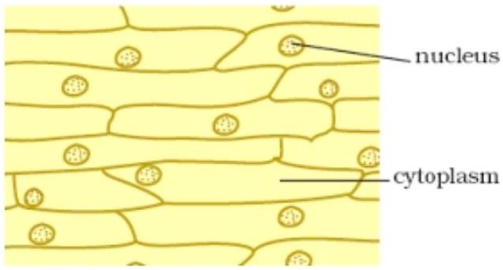
Multiple choice questions Based on Practical syllabus Temporary **Mount.**

1. 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 above 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) glycerin 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 color of the peel
   a) colorless b) red c) blue d) yellow

9. Use of toothpick in preparing temporary mount of cheek cell is

a) to scrap the inner lining of cheek
b) to place the cover slip
c) to remove the air bubble
d) none of the above

10. The stain used in preparing temporary mount of onion peel is
a) glycerin b) safranin c) water d) methylene blue

11. Which of the following organelle is visible in the temporary mount of onion peel
a) nucleus b) mitochondria c) Golgi body d) lysosomes

12. Soham while observing an onion peel slide under the microscope noted the following characteristics.
a) Presence of a single nucleus in a cell
b) Cells attached edge to edge without any intercellular spaces.
c) Presence of cell wall around each cell
d) 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:-
a) Cell wall, nucleus, and cytoplasm
b) Plasma membrane, cytoplasm, nucleus
c) Plasma membrane, nucleus, mitochondria
d) Cell wall, nucleus, vacuole

14. Use of brush in preparing temporary mount of onion peel is-
a) to paint the peel
b) to transfer the peel
c) to remove the air bubble
d) to clean the slide

15. Microscopic observation of onion peel shows nucleus at the periphery the reason for this is
a) large nucleus
b) large vacuole
c) lack of cytoplasm
d) 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) PA >PB >PC
   (b) PA <PB <PC
   (c) PA <PB >PC
   (d) PA =PB =PC

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 in100 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 %

Assignment No. 5.4

Questions on Assertion and Reason

1. **Assertion (A)** : Cell is the fundamental and structural unit of life
   Reason (R): All living organisms have a eukaryotic cell

Choose the correct option

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

---

2. **Assertion: (A)** All living organisms are composed of cells and products of cells.
   Reason (R): All cells arise from pre-existing cells.

Choose the correct option

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

Paragraph Based Questions:

1. Read the passage and answer the questions given below.

The cell membrane is the outermost covering of the cell that separates the contents of the cell from its external environment. It is made up of protein and lipid. It allows or permits the entry and exit of some materials in and out of the cell. Some substances like carbon dioxide or oxygen can move across the cell membrane by a process called diffusion. Osmosis is a special type of diffusion through a selectively permeable membrane. Membrane bound structures called organelles are found in the cytoplasm. Some organelles like mitochondria and chloroplast are bounded by two membranes. Ribosomes synthesis protein.

A. The cell membrane is made up of substances prepared by:

a. RER and Nucleus

b. SER and Plastids

c. RER and SER

d. Cellulose and SER

B. Which process is responsible for the absorption of water by the roots of a plant?

a. Diffusion

b. Endocytosis

c. Osmosis

d. Plasmolysis

C What would happen when a Plant cell is placed in concentrated salt solution for 10 minutes?

a. It will swell

b. It will shrink

c. It gets plasmolysed

d. It remains the same

D Which of these have a cell wall?

a. Bacteria
b. *Amoeba*
c. Yeast
d. Viruses

E. **Assertion (A):** De-shelled eggs swell up in hypotonic solution.
Reason (R): An egg is rich in protein.

Choose the correct option

a. Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
b. The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
c. Assertion is true but the Reason is false.
d. The statement of the Assertion is false but the Reason is true.

Chapter 6

TISSUES

Plant Tissues

Learning Outcomes:

Students will be able to learn	Different types of Simple plant tissues	After completing the chapter and attempting from SS Q1 to Q5
Students will be able to learn and draw	cells in the epidermis specially stomata	After completing the chapter and attempting from SS Q6 & Q7
Students will be able to learn	what are complex plant tissues and their function. Permanent tissues	After completing the chapter and attempting from SS Q8 & Q9
Students will be able to understand, reason and select	The correct option,	After completing the chapter and attempting SS MCQ
Students will be able to get the clarity	of the concepts.	After completing the chapter and attempting SS Questions on Assertion and Reason
Students will be able to analyse and select	the correct options	after completing the paragraph based questions

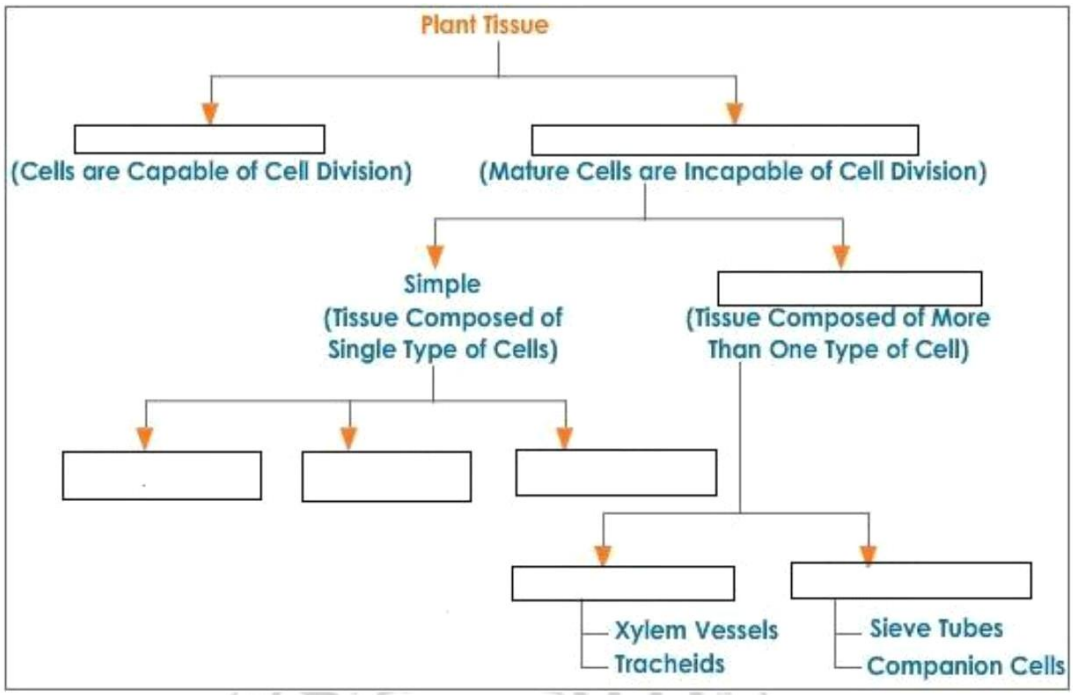
Assignment 6.1

Plant Tissues

Q1. What is a tissue?

_____

Q2. Complete the following:



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

_____

_____

_____

Q4. Give the various elements of Xylem and Phloem.

_____

_____

_____

_____

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?

_____

_____

Q8. Give the functions of xylem and phloem.

_____

_____

_____

Q9. Name the living elements of xylem and phloem.

_____

_____

_____

Q10. Define the process of differentiation.

_____

_____

_____

Chapter 6 : TISSUES

Animal Tissues

Learning Outcomes:

Students will be able to	1. Learn different types of Animal tissues 2. Understand their structure 3.Difference between different tissues 4. Their functions.	After completing the chapter and attempting from SS Q1 to Q6 Assignment 6.2
Students will be able to understand reason and select	the correct option	After completing the chapter and attempting from SS theory and practical MCQ assignment 6.3&6.4
Students will be able to get the clarity	of the concepts.	After completing the chapter and attempting from SS Questions on Assertion and Reason Assignment 6.5
Students will be able to understand, analyse and select	the correct option	After attempting paragraph based questions assignment 6.5

Assignment No. 6.2

Q1. Give reasons:

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

_____

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

_____

(iii) Presence of contractile protein in the muscles.

_____

(iv) Why are muscles named as striated or unstriated?

_____

(v) Neurons are long cells.

_____

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

_____

Q 2 Complete the table

EPITHELIAL TISSUE	TYPES	LOCATION
	Squamous Epithelium	
		Respiratory tract
	Glandular Epithelium	

Q 3. Give the functions and components of blood.

_____

_____

_____

_____

_____

Q 4. Differentiate between:

(i) Bone and Cartilage

(ii) Tendons and ligament

(iii) Striated muscles and Cardiac muscles

(iv) Unstriated muscles and skeletal muscles.

Q 5. Give the function of axon and dendrite.

Q 6. What is the role of Adipose tissues in our body?

Assignment No: 6.3

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 tissue
   d) Areolar tissue

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

Assignment No: 6.4

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 check

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

Assignment No: 6.5

Questions on Assertion and Reason

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

   Reason (R): Various simple tissues in plants are parenchyma, collenchyma and sclerenchyma.

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 (A)** : The cells of connective tissues except blood secrete fibres.
   Reason (R): Fibers provide strength, elasticity and flexibility to the tissue.

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 (A)**: Tissue is made up of many type of cells.
   Reason(R): Different cells have different functions.

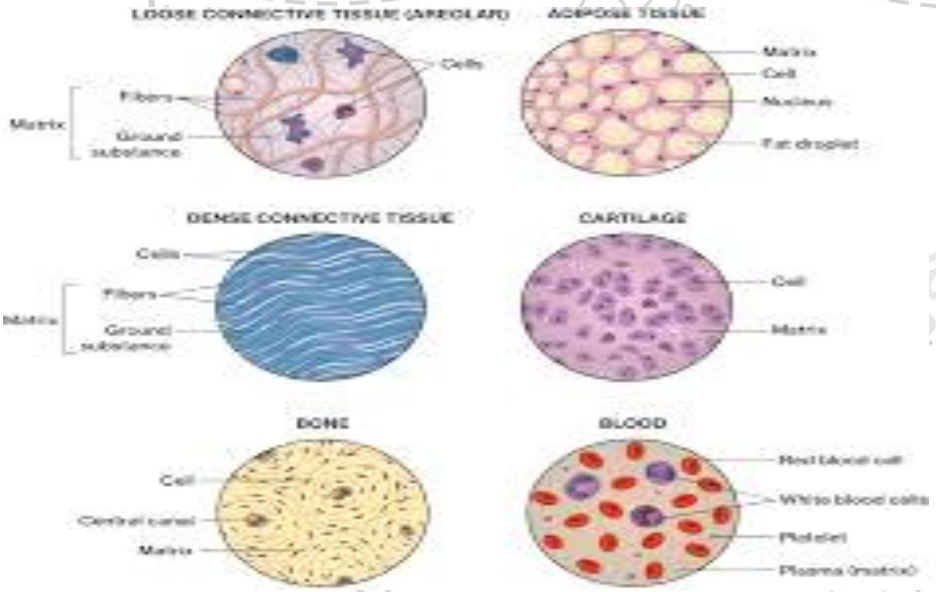
Choose the correct option

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

Paragraph Based Questions

1.Read the paragraph and answers the questions given below

Connective tissues are characterized by an abundance of intercellular matrices with relatively few cells. Connective tissue cells are able to reproduce but not as rapidly as epithelial cells. Connective tissues is a network that binds structures together, form a framework and support an organs and the body as a whole, store fat, transport substances, protect against disease, and help repair tissue damage. They occur throughout the body. Numerous cell types are found in connective tissue. Three of the most common are the fibroblast, macrophage, and mast cell. The types of connective tissue include loose connective tissue, adipose tissue, dense fibrous connective tissue, elastic connective tissue, cartilage, osseous tissue (bone), and blood.



Q1. A person met with an accident in which two long bones of hand were dislocated. Which among the following may be the possible reason?
(a) Tendon break
(b) Break of skeletal muscle
(c) Ligament break
(d) Areolar tissue break

Q2. Which of the following helps in repair of tissue and fills up the space inside the organ?
(a) Tendon
(b) Adipose tissue
(c) Areolar
(d) Cartilage

Q3. Bone matrix is rich in
(a) fluoride and calcium
(b) calcium and phosphorus
(c) calcium and potassium
(d) phosphorus and potassium

Q4. Contractile proteins are found in
(a) bones
(b) blood
(c) muscles
(d) cartilage

Q5. Select the incorrect sentence.

(a) Blood has a matrix containing proteins, salts, and hormones.
(b) Two bones are connected with ligament.
(c) Tendons are non-fibrous tissue and fragile.
(d) Cartilage is a form of connective tissue.

TERM 1

Revision Worksheet

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 genetic material and cytoplasm in an animal cell is called:
   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

a) _____is the process by which unspecialized structures become modified and specialized for performing specialized functions.

b) Tracheids are_____cells_____(with/without) Protoplasm.

c) _____is made of white fibres and connects muscles to bones.

d) Pigeon pea is a good source of_____

e) Xanthium and parthenium are commonly known as _____

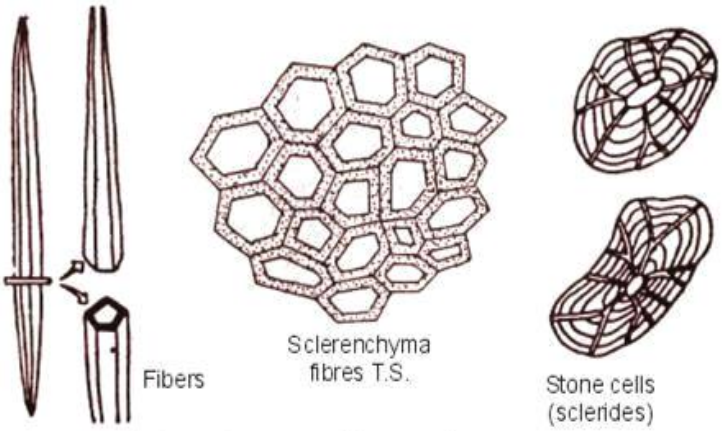
Q 4. Define the following 4

1. Plasmolysis
2. Osmosis
3. Apiculture
4. Macronutrients

Q 5. Answer the following 8

1. Differentiate between compost and Green manure
2. Name two types of animal feed.
3. What is the function of lignin deposition in cell wall?
4. 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. 2
B) Give one function of sclerenchyma tissue



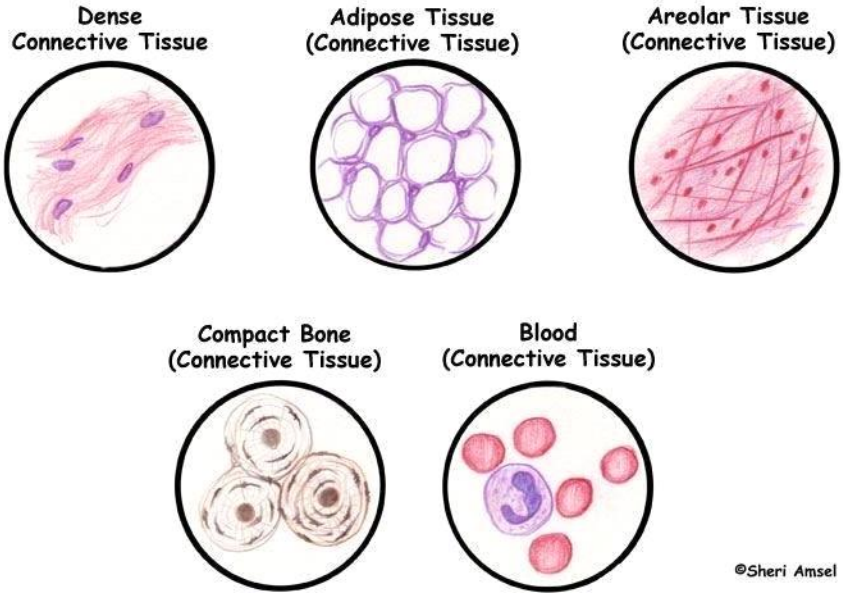
Sclerenchymatous fibers and stone cells

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?

Q8. Observe the given slides. It shows various types of connective tissues in animals. 3

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

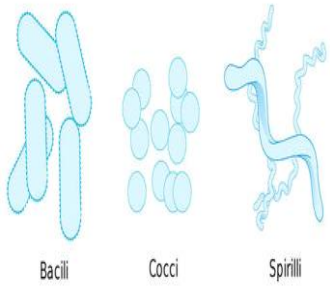
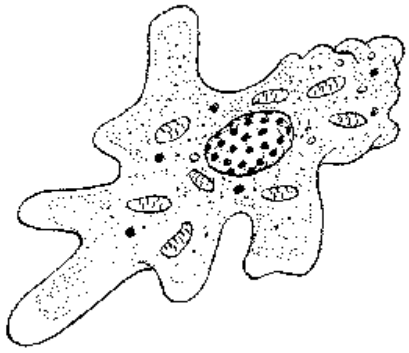
Diversity in the Living World

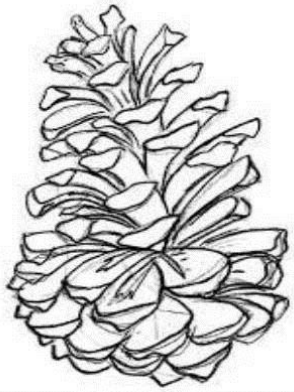
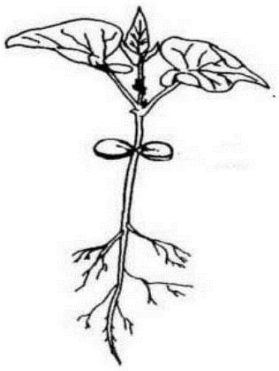
Learning Outcomes:

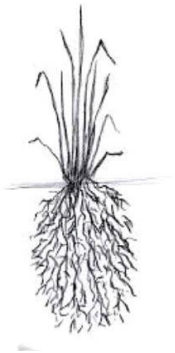
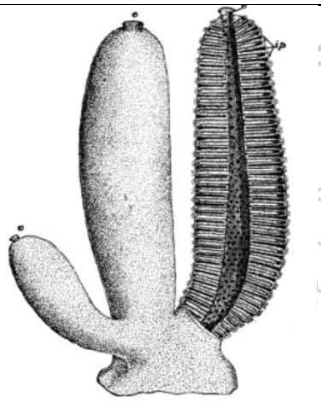
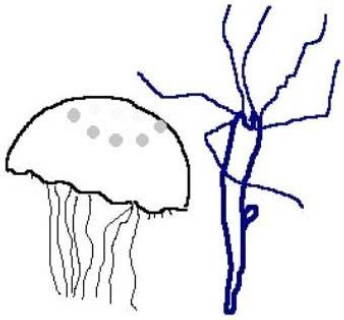
Students will be able to classify	the plant and animal species in different Kingdoms, Divisions, Phylum and classes	After completing the chapter and attempting from SS Diversity Chart assignment 7.1
Students will be able to	understand, reason and select the correct option	After completing the chapter and attempting from SS MCQ based on theory and practical's assignment 7.2
Students will be able to get the clarity	of the concepts.	After completing the chapter and attempting from SS Questions on Assertion and Reason assignment 7.3
Students will be able to understand, analyse and select	the correct option	After attempting paragraph-based questions assignment 7.3

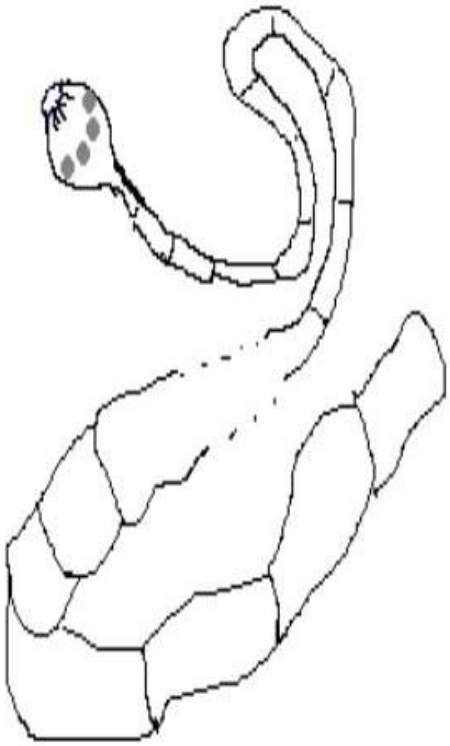
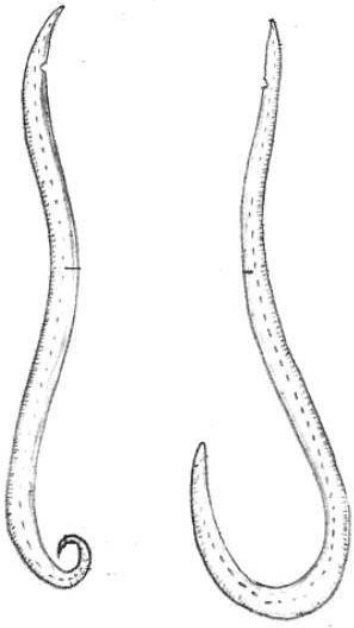
Assignment No: 7.1

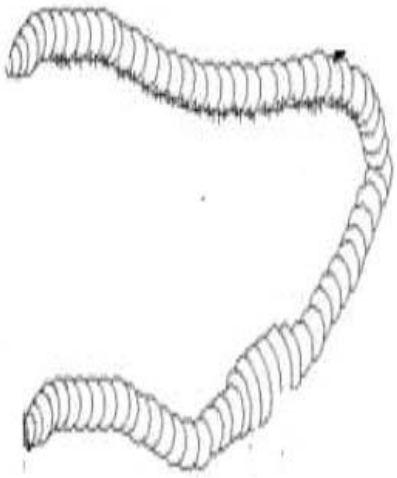
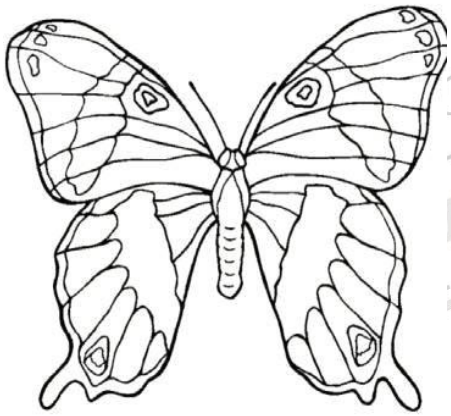
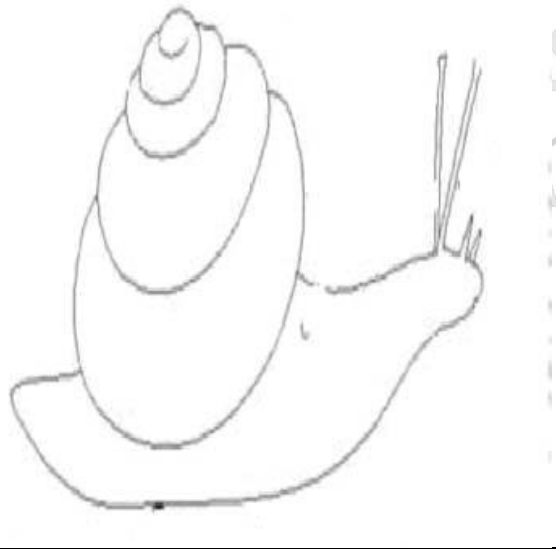
Q 1. Fill in the Chart given below

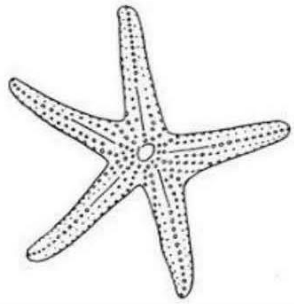
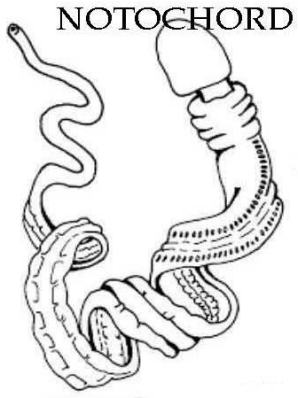
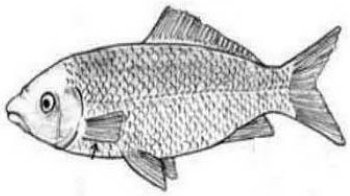
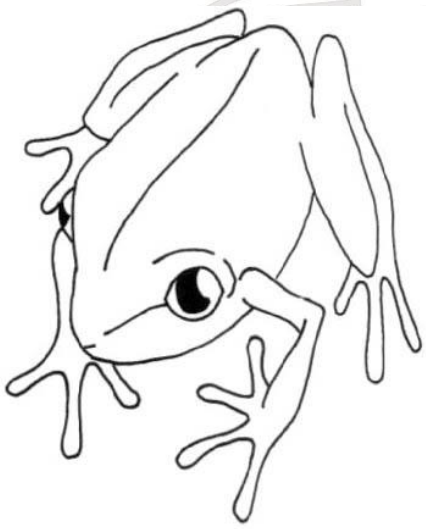
S No.	Organism	Identify specimen	Kingdom & /Division /Phylum	Two Characteristics: Kingdom / & Division/ Phylum/ Class
1.				
2.				
3.				
4.	CRYPTOGAMAE (spores) 			

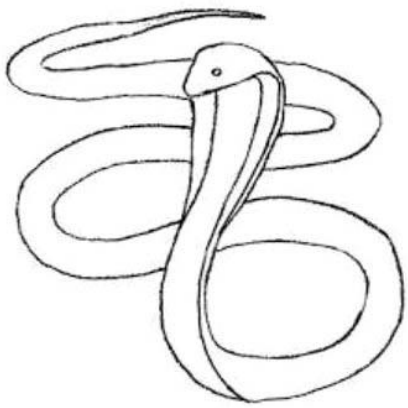
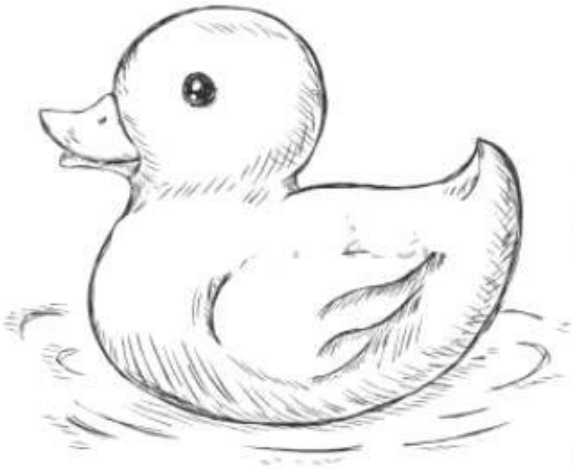
5.	CRYPTOGAMAE 			
6.	CRYPTOGAMAE 			
7.	PHANEROGAMAE (seed) 			
8.	PHANEROGAMAE 			

9.	PHANEROGAMAE 			
10.				
11.	ACOELOMATE 			

12.	ACOELOMATE 			
13.	PSEUDOCOELOMATE 			

14.	COELOMATE (WITH BODY CAVITY) 			
15.				
16.				

17.	NO NOTOCHORD 			
18.				
19.	NOTOCHORD (Replace by vertebral column) 			
20.				

21.				
22.				
23.				

Assignment No: 7.2

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 id 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) *Penicilium* 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) Cniderians,that are solitary living.
    c) Poriferans present at the sea bed.
    d) Cnidirians that live in the colonies

11. Hard calcium carbonate structures are used as skeleton.
    a) Echinodermata b) Protochordata c)Arthopoda d) Nematoda

12. Phylum feature 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) Jointed appendages
c) Three pairs of legs 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

Assignment No: 7.3

Questions on Assertion and Reason

1. **Assertion**: Species is the basic unit of classification.

   Reason: There are many organisms with similar features 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 (A)**: R. Whittekar proposed five kingdom classification.
   Reason (R): The criteria of classification 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 (A)**: Divisions Thallophyta , Bryophyta and Pteridophyta belong to the group Cryptogamae.
   Reason (R): 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 (A)**: The organisms that belong to phylum Annelida have coelomic cavity.

Reason (R): 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

Paragraph Based Questions

1. Read the paragraph given below and answer the questions that follow.

In this group, the plant body is differentiated into roots, stem and leaves and has specialised tissue for the conduction of water and other substances from one part of the plant body to another. Some examples are Marsilea, ferns and horse-tails. The reproductive organs of plants in all these three groups are very inconspicuous, and they are therefore called 'cryptogams', or 'those with hidden reproductive organs'. On the other hand, plants with well differentiated reproductive parts that ultimately make seeds are called phanerogams. Seeds are the result of sexual reproduction process. They consist of the embryo along with stored food, which assists for the initial growth of the embryo during germination.

A. Identify the group where plant body is differentiated into roots, stem and leaves and vascular tissues are present.

B. Name the three groups where reproductive organs are inconspicuous.

C. Monocots and dicots are two groups present in
a.Pteridophytes
b. Gymnosperms
c. Bryophytes
d. Angiosperms

D. To which group would a plant that produces flowers belongs?
a.Bryophyta
b. Thallophyta
c. Angiosperms
d. Gymnosperms

2. Read the paragraph given below and answer the questions

These animals have a true vertebral column and internal skeleton, allowing a completely different distribution of muscle attachment points to be used for movement. Vertebrates are bilaterally symmetrical, triploblastic, coelomic and segmented, with complex differentiation of body tissues and organs. They are divided into 5 classes

A. Identify the Phylum to which these animals belong.
B. List two features possessed by all chordates
C. The animals belonging to this class of vertebrates are cold-blooded, have dry scales and breathe through lungs. Identify the class

   a. Cyclostomata
   b. Pisces
   c. Amphibia
   d. Reptilia

D. Aves are warm blooded animals with a _____ chambered heart
   a. 2
   b. 3
   c. 4
   d. 5

Chapter: 13
WHY DO WE FALL ILL?

Learning Outcomes:

Students will be able to learn	Different types of diseases and its effects.	After completing the chapter and attempting from SS Q1 to Q8 assignment 13.1
Students will be able to learn	a. What are Pathogens? b. What disease is caused by which pathogen?	After completing the chapter and attempting from SS Q 9 onwards assignment 13.1
Students will be able to understand, reason and select	The correct option	After completing the chapter and attempting from SS MCQ assignment 13.2
Students will be able to get the clarity	Of the concepts.	After completing the chapter and attempting from SS Questions on Assertion and Reason assignment 13.3
Students will be able to understand, analyse and select	the correct option	After attempting paragraph based questions assignment 13.3

ASSIGNMENT: 13.1

Q1 a. What is a disease?

_____

_____

b. Give common methods of transmission of diseases?

_____

_____

Q2. Differentiate between Infectious and Non-infectious diseases?

_____

_____

_____

Q3. What are Infectious agents? Give example.

_____

_____

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?

_____

_____

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?

_____

_____

Q 8. Give reasons for the following:

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

b. Penicillin has different effect on bacteria and human cells?

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.

d. Prevention is better than cure.

Q9. What are pathogens?

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

a. Virus.

b. Bacteria.

c. Protozoan.

d. Fungi

Q11. Write short note on AIDS?

_____

_____

_____

_____

Q12. Mark the statements as 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.

Assignment No: 13.2

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 communicable disease?

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

5. AIDS 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

Assignment No: 13.3

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.

1. Read the passage given below and answer the questions

All viruses, for example, live inside host cells, whereas bacteria very rarely do. Viruses, bacteria and fungi multiply very quickly, while worms multiply very slowly in comparison. Taxonomically, all bacteria are closely related to each other than to viruses and vice versa. This means that many important life processes are similar in the bacteria group but are not shared with the virus group. As a result, drugs that block one of these life processes in one member of the group is likely to be effective against many other members of the group. But the same drug will not work against a microbe belonging to a different group. Common examples of diseases caused by viruses are the common cold, influenza, dengue fever and AIDS. Diseases like typhoid fever, cholera, tuberculosis and anthrax are infections caused by different kinds of fungi.

A. Which group of microbes multiply quickly and which multiplies slowly?

B. Why is it difficult to design anti- viral medicines?

C. Drugs that check the growth of bacteria are called:

a. Antigens
b. Antibodies
c. Antibiotic
d. Antipyretic

D. Hepatitis A is a communicable disease , caused by a :

a. Virus
b. Protozoa
c. Worm
d. Bacteria

E. An example of a disease caused by a virus is:

a.Tuberculosis
b.Typhoid
c. Covid -19
d. Cholera

ACTIVITY- BASED ON RESEARCH

Aim: Identify the diseases which had spread in your city/locality in the year 2020-21 due to mosquitoes/Virus.

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

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

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

Chapter 14

NATURAL RESOURCES

Mineral riches in the soil Biogeochemical Cycle

Learning Outcomes:

Students will be able to understand.	a. What is soil? b. How soil is formed and its source. c. Types of soil. d. Suitable soil for agriculture. e. Minerals present in soil. f. Soil pollution g. Soil erosion and how to control it.	After completing the chapter and attempting from SS Q1 to Q5 assignment 14.1
Students will be able to learn	a. What is a biogeochemical cycle? b. Their role in keeping a healthy environment. c. What are nitrogen fixing bacteria	After completing the chapter and attempting from SS Q6 to Q9 assignment 14.1
Students will be able to	a. What is greenhouse effect? b. Its harmful effects.	After completing the chapter and attempting from SS Q10 assignment 14.1
Students will be able to understand, reason and select	The correct option	After completing the chapter and attempting from SS MCQ assignment 14.2
Students will be able to get the clarity	Of the concepts.	After completing the chapter and attempting from SS Questions on Assertion and Reason assignment 14.3
Students will be able to understand, analyse and select	the correct option	After attempting paragraph-based questions assignment 14.3

Assignment No. 14.1

Q1. What is soil? How is soil formed?

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

Q3. What are the causes of soil pollution?

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

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

Q6. What do you mean by Biogeochemical Cycle?

_____

_____

_____

_____

_____

_____

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

Q8. Draw the Nitrogen cycle.

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

Q10. What is Green House Effect?

Assignment No. 14.2

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 greenhouse effect is
a) CO_2 b) O_2 c) N_2 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

Assignment No. 14.3

1. Read the passage and answer the questions that follow:

Nitrogen gas makes up 78% of our atmosphere and nitrogen is also a part of many molecules essential to life like proteins, nucleic acids (DNA and RNA) and some vitamins. Nitrogen is thus an essential nutrient for all life-forms and life would be simple if all these life-forms could use the atmospheric nitrogen directly. However, other than a few forms of bacteria, life-forms are not able to convert the comparatively inert nitrogen molecule into forms like nitrates and nitrites which can be taken up and used to make the required molecules. The 'nitrogen-fixing' bacteria may be free-living or be associated with some species of dicot plants. Most commonly, the nitrogen-fixing bacteria are found in the roots of legumes. Plants generally take up nitrates and nitrites and convert them into amino acids which are used to make proteins. Some other biochemical pathways are used to make the other complex compounds containing nitrogen.

A. Name two molecules essential to life which contain nitrogen.

B. List the form of nitrogen that can be used by living organisms.

C. Which of the following are NOT involved in nitrogen fixation

a. Free living bacteria
b. Lightning
c. Parasitic bacteria
d. *Rhizobium*

D. **ASSERTION (A)**: Nitrogen makes up 78% of our atmosphere
REASON (R): It is present as NO2 in the atmosphere.

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.

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 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 15

IMPROVEMENT IN FOOD RESOURCES

Learning Outcomes:

Students will be able to learn	What are the different types of crops.	After completing the chapter and attempting from SS Q1 to Q4 assignment 15.1
Students will be able to learn	a. Steps that help in improving crop yield. b. Six factors by which crop variety improvement is achieved	After completing the chapter and attempting from SS Q5 to Q7 assignment 15.1
Students will be able to learn	a. What is manure and fertilizer? Difference between them. b. Different types of cropping methods.	After completing the chapter and attempting from SS Q8 & Q10 assignment 15.1
Students will be able to learn	a. What are weeds and how to deal with them? b. The factors responsible for spoilage of grain.	After completing the chapter and attempting from SS Q11 & Q12 assignment 15.1
Students will be able to learn	a. What is animal husbandry? b. How to rear animals for good quality produce? c. To select the type of breed for better produce. d. What scientific steps to follow to keep them healthy?	After completing the chapter and attempting from SS Q13 & Q18 assignment 15.1
Students will be able to get the clarity	Of the concepts.	After completing the chapter and attempting from SS Questions on Assertion and Reason assignment 15.3
Students will be able to understand, analyse and select	the correct option	After attempting paragraph based- questions assignment 15.3

Assignment No. 15.1

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

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

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

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

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

Q6. Name two methods for improving crop variety.

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 programs with respect to the Poultry farming.

Q18.What is broiler chicken?

Assignment No. 15.2

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 an 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

Assignment No. 15.3

Questions on Assertion and Reason

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

1. Word Search

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:

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

Paragraph based questions

1. Read the passage and answer the questions given below

Poultry farming is undertaken to raise domestic fowl for egg production and chicken meat. Therefore, improved poultry breeds are developed and farmed to produce layers for eggs and broilers for meat. The cross-breeding programmes between Indian (indigenous, for example, Aseel) and foreign (exotic, for example, Leghorn) breeds for variety improvement are focused on to develop new varieties for the following desirable traits—

(i) number and quality of chicks;
(ii) dwarf broiler parent for commercial chick production;
(iii) summer adaptation capacity/ tolerance to high temperature;
(iv) low maintenance requirements;
(v) reduction in the size of the egg-laying bird with ability to utilise more fibrous cheaper diets

Q1. Poultry farming is undertaken to raise following
(i) Egg production
(ii) Feather production
(iii) Chicken meat
(iv) Milk production

Choose the correct option:

(a) (i) and (iii)
(b) (i) and (ii)
(c) (ii) and (iii)
(d) (iii) and (iv)

Q2. Poultry fowl are susceptible to the following pathogens
(a) Viruses
(b) Bacteria
(c) Fungi
(d) All of the above

Q3. Animal husbandry is the scientific management of
(i) animal breeding
(ii) culture of animals
(iii) animal livestock
(iv) rearing of animals

Choose the correct option:
(a) (i), (ii) and (iii)
(b) (ii), (iii) and (iv)
(c) (i), (ii) and (iv)
(d) (i), (iii) and (iv)

Q4.Which vitamins are added in the poultry feed.
(a)Vitamin A and Vitamin K
(b)Vitamin B and Vitamin D
(c)Vitamin A and Vitamin D
(d)Vitamin B and Vitamin K

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 the earthworms for pleasure. The farmer strongly objected and asked them to leave the field.

    a. What could be the reason behind such a behavior of the farmer?
    b. What was do you find missing in the student's behavior?
    c. Which phylum do earthworm belong to?
    d. 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.

    a. Identify the phylum to which the insect belong to.
    b. Enlist any two characteristic features of this phylum.
    c. 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 he was suffering from lung cancer.

    a. What could be the possible reason for Radhey's respiratory disorder?
    b. Which major pollutants are present in exhaust of vehicles?
    c. 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 daytime.

    a. Name the disease, about which preventive instruction are given in the assembly.
    b. Name the vector of this disease.
    c. Give two preventive environmental measures.

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:

a. What can be the concerned crop possibly?
b. 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.

a. In the situation above, who wins your support: the priest or the son? Justify your answer by giving two reasons.
b. 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	What are Gymnosperms? Give an example	1
5	Describe briefly, how do antibiotics work? Does penicillin has any effect on our cells.	2
6	Explain any two characteristics used for hierarchical classification of animals.	2
7	What are Lichens?	2
8	Write a note on Cryptogams.	2
9	Define immune system. Give reason, in a class of 30 students only couple of them suffer with cold.	2
10	Who gave Binomial Nomenclature? Give the three rules that are followed for scientific naming of organisms?	3
11.	Identify the Phylum from the following features: i. Exoskeleton, jointed appendages, blood filled cavity. ii. Moist skin, respiration by lungs/skin, three chambered heart. iii. Spiny skinned with water vascular system	3
12.	Explain the following terms: i. Vector ii. Communicable disease iii. Pathogen iv. Vaccination v. Non- infectious disease	5

PRACTICAL STUDY MATERIAL

INSTRUCTIONS FOR MAKING PRACTICAL FILE

- **Index to be made on first page (Refer to format given below)**
- **Written work to be done on ruled sheets with a pen**
- **Titles to be written in black ink and rest in blue ink only**
- **All diagrams corresponding to written work to be drawn and labelled on blank pages with pencil only**
- **Each experiment to begin on a fresh page**
- **Practical File to be covered with brown paper**
- **Name. Class and Section of the student to be mentioned outside the practical file**

FORMAT FOR INDEX

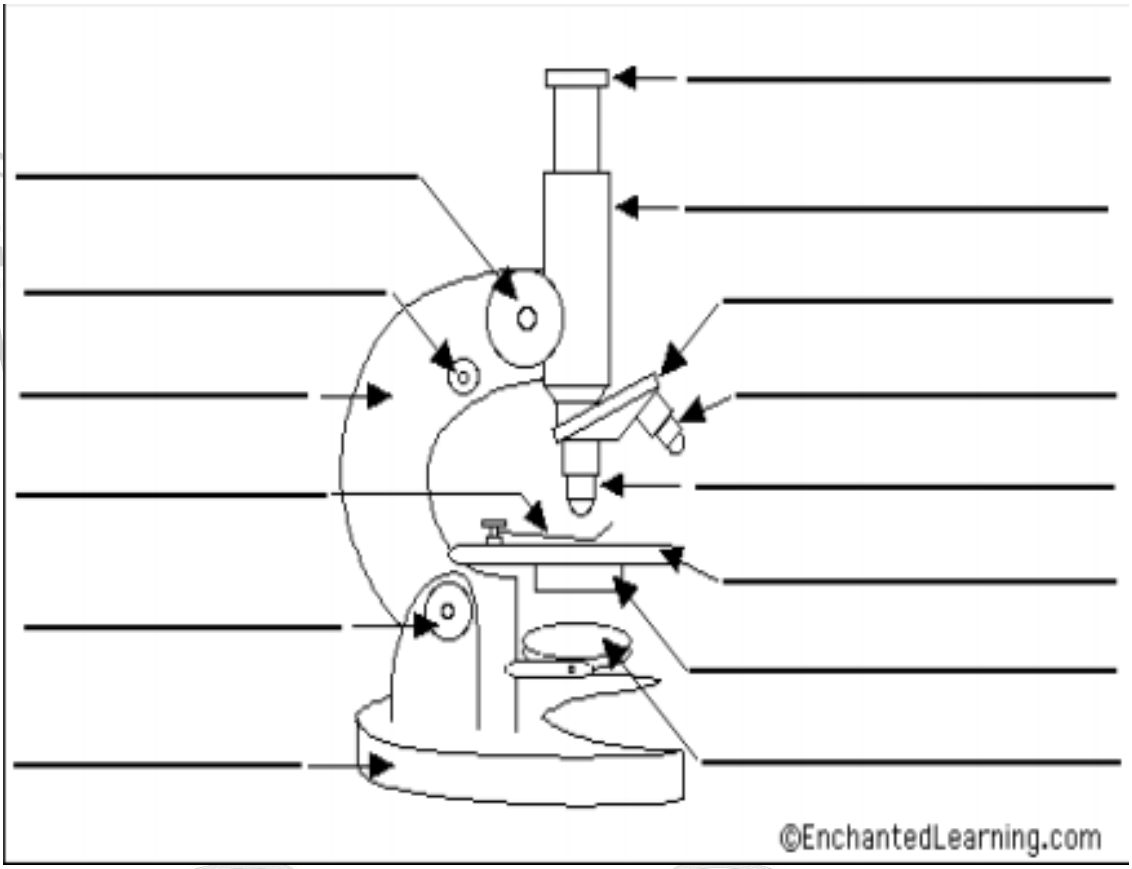
Experiment No.	Name of Experiment	Date	Teachers Remarks

TERM 1

PRACTICAL PORTION

EXPERIMENT No 1

LABEL THE PARTS OF THE MICROSCOPE FROM THE LIST GIVEN BELOW



Choose the correct labelling from the following words

1. **Arm**
2. **Base**
3. **Body tube**
4. **Diaphragm**
5. **Eyepiece**
6. **Course focus adjustment**
7. **High power objective lens**
8. **Low power objective lens**
9. **Source of light**
10. **Revolving nosepiece**
11. **Stage**
12. **Stage clip**

MULTIPLE CHOICE QUESTIONS

1. To calculate total magnification one should _____ the magnification of eye piece and objective lens.

a. Multiply

b. Divide

c. Add

d. Subtract

2. Slide is placed on the cover slip

a. True

b. False

3. What are the function of the parts A and B

A	A-Adjust the coarse focus	B- Provide illumination
B	A- To magnify the object	Provide illumination
C	A- To adjust the fine focus	To hold the slide on the stage
D	A- To magnify the object	To hold the slide on the stage

4. Calculate the total magnification, if the objective lens is 10 X and the eyepiece is 4 X

a. 2.5 X

b. 40 X

c. 14X

d. 4X

5. Part of the microscope that holds the objective lens is:

a. Stage

b. Diaphragm

c. Revolving Nosepiece

d. Body tube

EXPERIMENT No 2

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

Materials Required

Onion, slides, cover slips, forceps, needles, dropper, glycerin, blotting paper, safranin solution and a microscope.

Procedure

- Take a medium sized onion, remove outer scale leaf and cut it into pieces
- Take a fleshy leaf and take out a thin peel from concave side
- Take a clean dry slide and place the peel in the centre of the slide
- Add a drop of water to prevent drying of cells
- Add 2 drops of SAFRANIN STAIN and keep it for 1 minute.
- Remove extra stain with blotting paper.
- Add a drop of glycerine to prevent drying up of cells
- Take a dry and clean coverslip and gently place it on the slide with the help of needle such that there are no air bubbles.
- Observe the slide under low power and then high power of microscope

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.

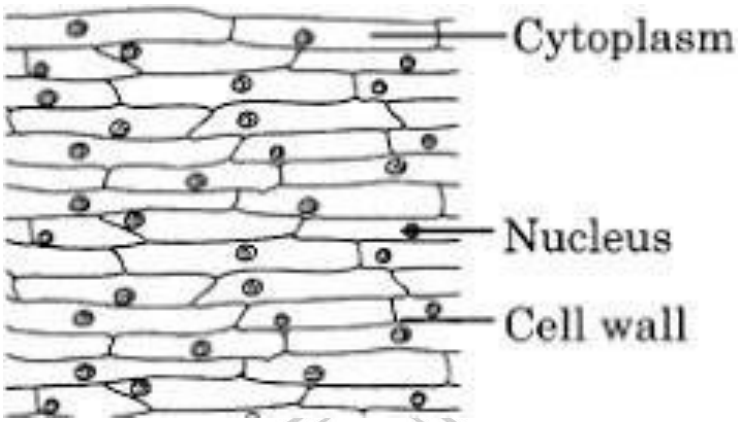
Inference

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.



ONION PEEL CELLS UNDER MICROSCOPE

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

Materials Required

Slide, coverslip, methylene blue stain, blotting paper, toothpick, needle, dropper, brush, microscope and glycerin.

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 1-2 minutes place the coverslip gently on the cheek cell with the help of needle and avoid the air bubble. (A drop of glycerin 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

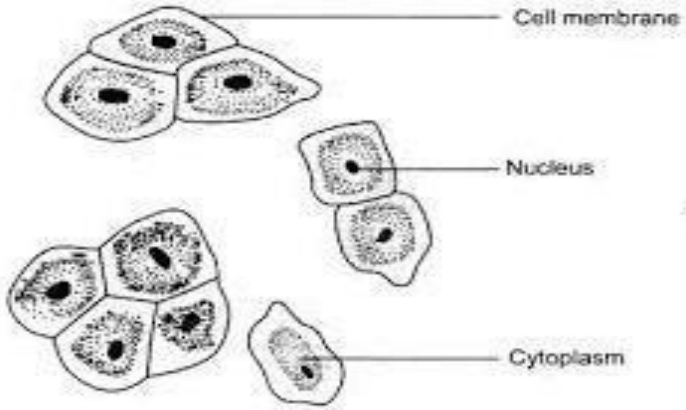
1. Cells with irregular shapes are seen.
2. A prominent nucleus is seen in the middle of the cell.
3. A thin membrane called plasma-membrane is visible at the boundary of each cell.
4. The cells do not show any intercellular space.
5. No big vacuoles and cell wall is seen.

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
UNDER MICROSCOPE

EXPERIMENT No 3

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

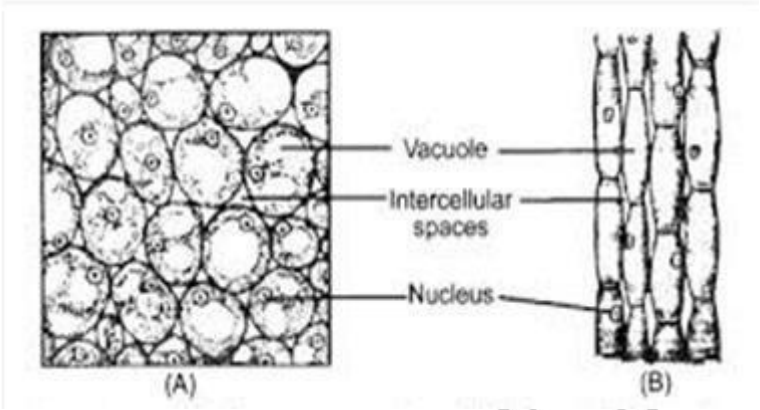
I. PARENCHYMA TISSUE

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



A. Transverse section B. Longitudinal section

Parenchyma Tissue

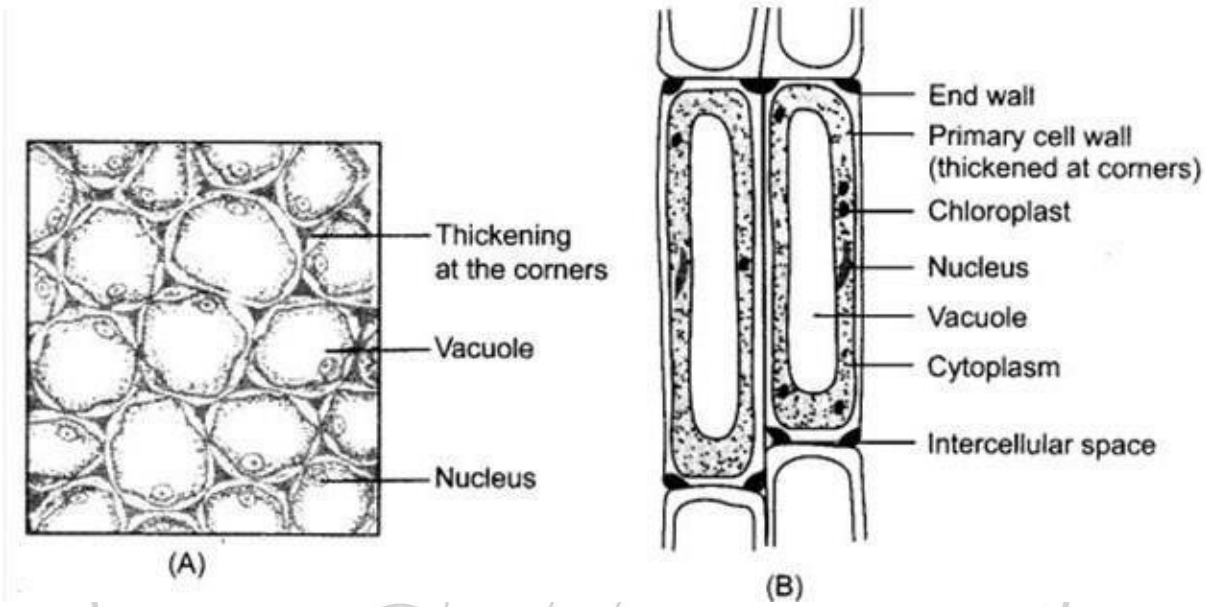
II. COLLENCHYMA TISSUE

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 comers. 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 comers.
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.



A. Transverse section B. Longitudinal section

Collenchyma Tissue

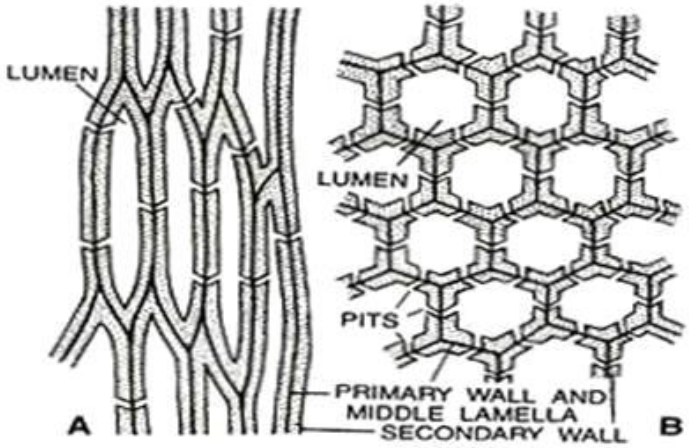
III.SCLERENCHYMA TISSUE

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



A. Longitudinal section B. Transverse section

SCLERENCHYMA TISSUE

EXPERIMENT No 4

ANIMAL TISSUES

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

Materials Required

Permanent slides of striated muscle, smooth, cardiac muscle, nervous tissue and compound microscope.

Procedure

1. Place the compound microscope where proper light can be received andreflected 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.

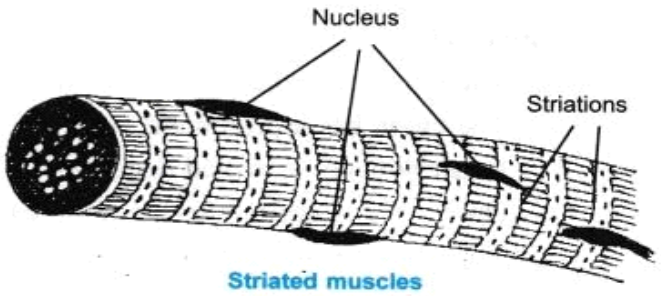
OBSERVATIONS

Striated muscles/ Skeletal 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.



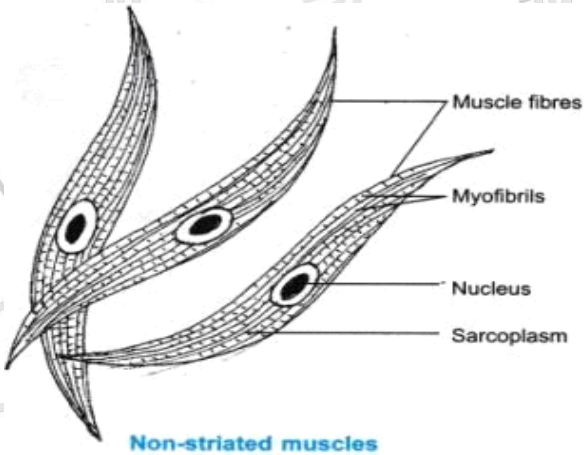
Striated muscles

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.



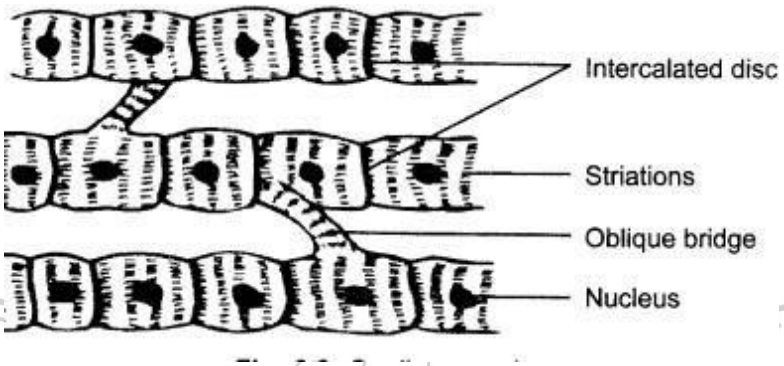
Non-striated muscles

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.

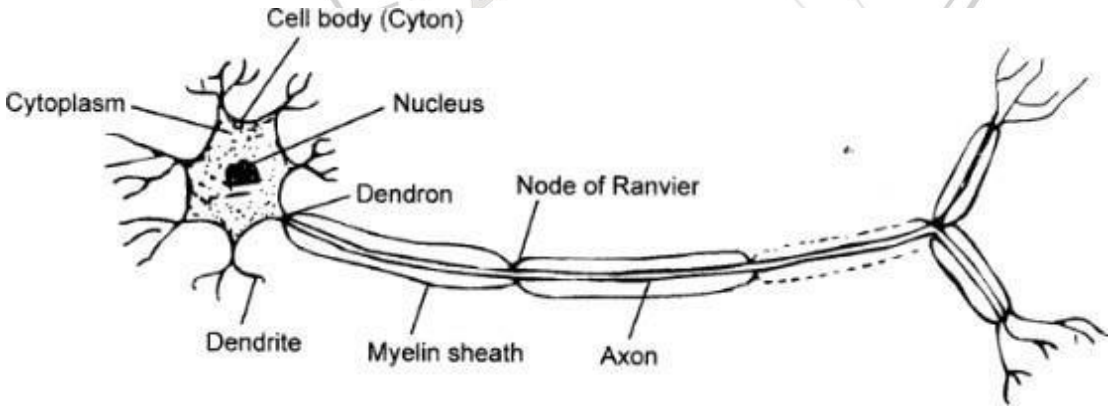


Nerve cell:

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



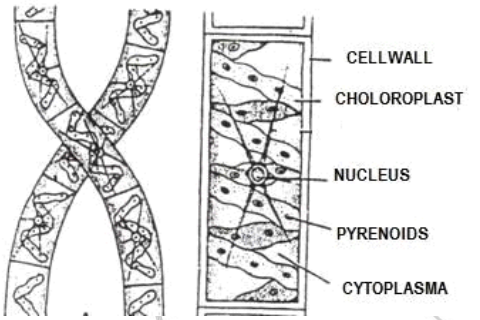
NERVE CELL

TERM 2 PRACTICAL WORK

EXPERIMENT 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.

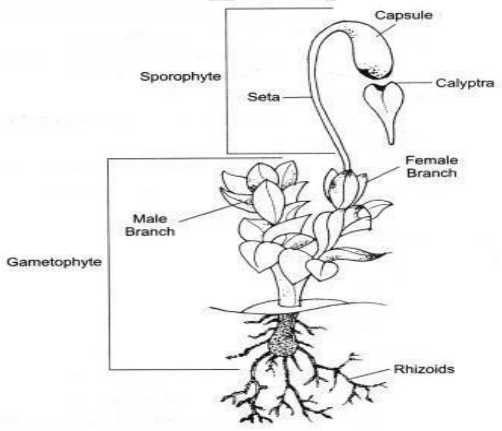
***1. Spirogyra* (Division : Thallophyta)**



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.

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

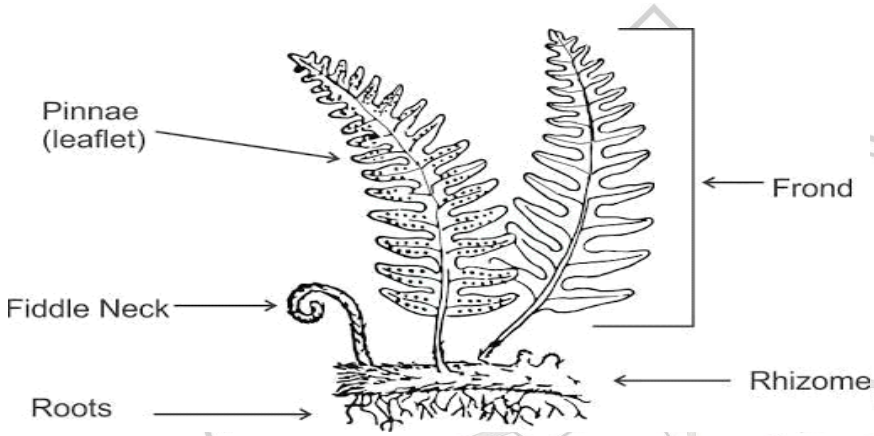


Funaria

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.

3. Fern (Division: Pteridophytra)

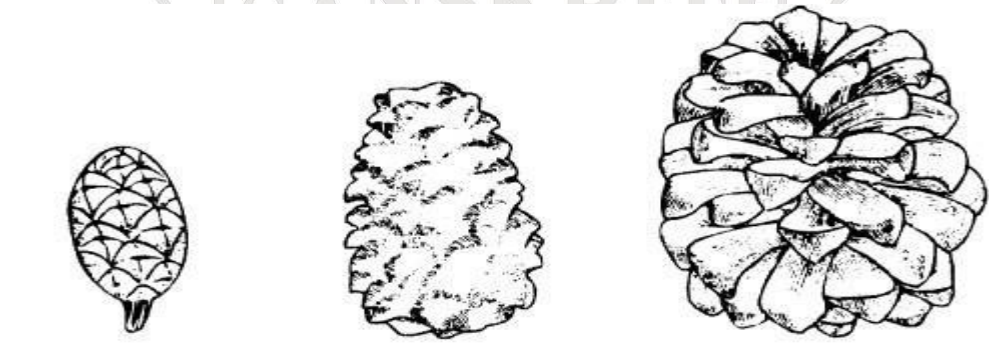


Fern

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

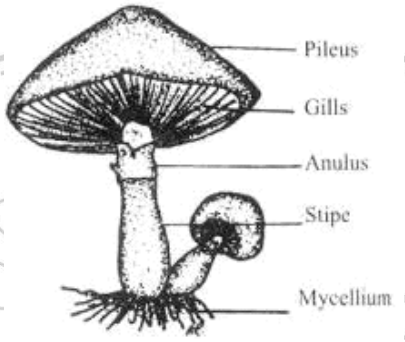
4. Pinus (Division – Gymnosperm)



Features

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

***5. Agaricus* :(Kingdom : Fungi)**



Agaricus

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.

EXPERIMENT : 2

ANIMAL SPECIMEN

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

1. **Earthworm (Phylum: Annelida)**

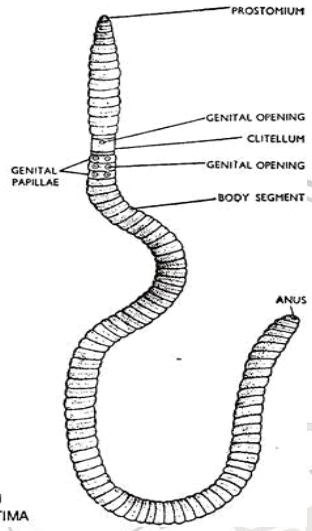


Fig. 191
PHERETIMA

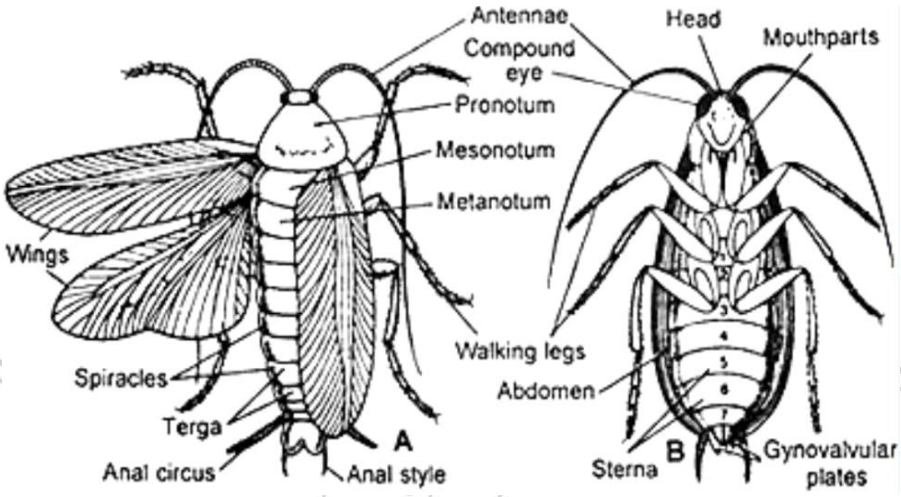
Features of Phylum (Specific):

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

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 colors help it to camouflage with soil and protect from enemies.

2. Cockroach(Phylum: Arthropoda, Class: Insecta)



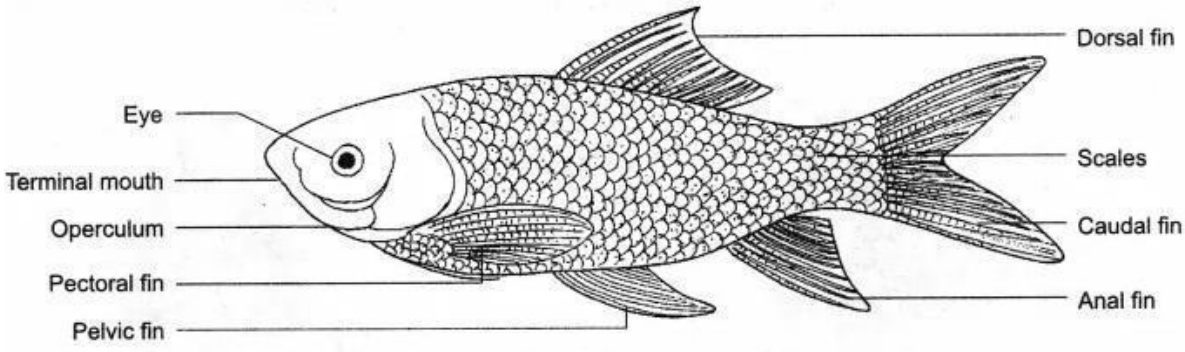
Features of Phylum (Specific):

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.

3. Fish (Phylum: Vertebrata, Class: Pisces)



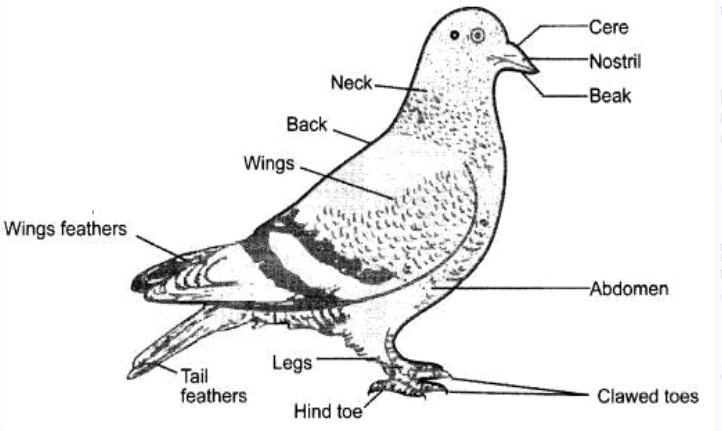
Features of Phylum

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.

4. 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 steamlined, 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

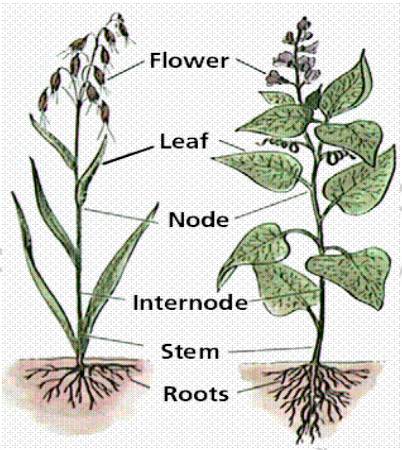
Adaptive Features

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

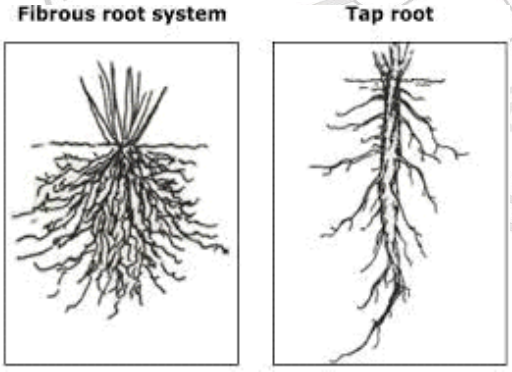
EXPERIMENT :3

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

Materials Required: A monocot and Dicot plant

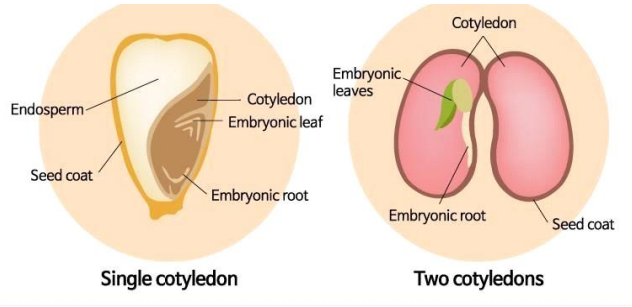


Monocot and Dicot Plant



Roots in Monocot and Dicot Plant

Leaves of Monocot and Dicot Plant



Seeds of Monocot and Dicot Plant

Monocot Flower

Dicot Flower

Difference between Monocot and Dicot Plants

Character	Monocot	Dicot Plant
Root	Primary root is absent. Adventitious root system Usually remain close to the soil surface.	Primary root with lateral branches is present. Tap root system. Usually grow deep soil.
Leaf	Long and narrow shape Generally parallel venation Dorsal and ventral surfaces identical (Isobilateral)	Short and broad Generally reticulate
Stem	Internodes are usually hollow. Generally secondary growth (in thickness) is absent.	Internodes are solid. Generally secondary growth is present.

Flower	Floral parts are multiple of three (Trimerous) Sepals and petals are present	Floral parts are multiple of five (Pentamerous) and multiples of four (Tetramerous) Sepals and petals are present
Seed	One cotyledon is present called scutellum. Generally endospermic seed	Two cotyledons are present. • Generally endospermic seed
Examples	Maize, Grass, Wheat, lily, Onion, Coconut and Banana	Pea, Gram, Rajmah (Beans), Mustard, Tamarind, Mint, China rose (Hibiscus) and Mango

SAMPLE QUESTION PAPER
Academic Session: 2020-21
Annual Examination
Subject: Science
Class -IX

Time: 3 Hours **Max marks: 80**

General Instructions:

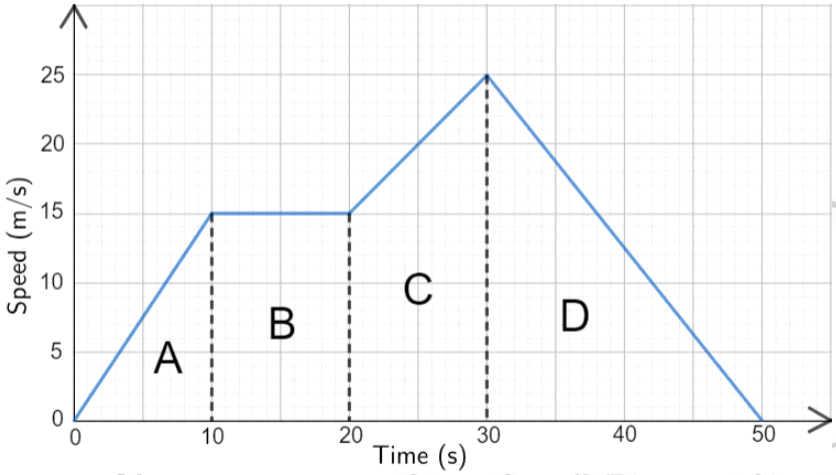
- The reading time is from 7:45 am to 8:00 am.
- The writing time is from 8:00 am to 11:00 am.
- By 11:20 am, the PDF file of the answer sheets needs to be created, attached, and submitted. Once submitted, it cannot be resubmitted.
- Children who avail extra time, may submit the answer sheets by 12:20 pm.
- The Answer sheets need to be scanned and uploaded as a single pdf file in portrait mode. Make sure that you turn in the work in the time frame assigned.
- No image to be uploaded.
- The question paper comprises three sections A, B, and C. There are 36 questions in the question paper. All questions are compulsory.
- There is no overall choice. However, internal choices have been provided in some questions. A student must attempt only one of the alternatives in such questions.
- Wherever necessary, neat, and properly labeled diagrams should be drawn.
- This paper has 11 printed sides.

	Section A **PHYSICS**	**MM -27**
Q1.	A man jumping out of a moving train falls with his head forward. Why?	1
Q2.	Name and define the physical quantity whose unit is $kg.m/s^2$	1
Q3.	Which is having a higher value of momentum - A bullet of mass 10 gram moving with a velocity of 400 m/s or a cricket ball of mass 400 gram moving with a velocity of 90 km/h?	1
Q4.	A bird hits the windscreen of a fast moving car and falls on the bonnet. Which of the two, car or bird suffers greater change in momentum? Why?	1
Q5.	Gravitational force between two small spheres is F. What will be the new force, if masses of the two spheres as well as the distance between them is doubled?	1
Q6.	Why are bone china crockeries wrapped in thermocol/bubble sheets during transportation?	1

Q7. A ball thrown up vertically returns to the thrower after 6s. Find the velocity with which it was thrown up. 1

Q8. **Answer any 4 subparts** 1X4 =4

Observe the speed - time graph of an object moving along a straight line and answer the questions given below.



8. (i) The accelerations during first 10 seconds is

a) 0 m/s^2
b) 1 m/s^2
c) 1.5 m/s^2
d) 2 m/s^2

8. (ii) The time interval during which the object moves with uniform speed

a) 0-10 seconds
b) 10-20 seconds
c) 20-30 seconds
d) 30 - 40 seconds

8. (iii) The retardation is

a) 1.0 m/s^2
b) 1.25 m/s^2
c) 1.5 m/s^2
d) 1.75 m/s^2

8. (iv) The distance covered during the time interval 20-30 seconds is

a) 100 m
b) 200 m
c) 300 m
d) 400 m

8. (v) The maximum acceleration is during

a) 0-10 seconds
b) 10-20 seconds
c) 20 -30 seconds
d) 30 - 40 seconds

Q9. **Answer any 4 subparts** 1X4 =4

The word energy is often used in our daily life but in science we give it a definite and precise meaning. Energy possessed by a body by the virtue of its motion is called kinetic energy and the energy possessed by the body by the virtue of its position or configuration is called potential energy. The law of conservation of energy states that energy can neither be created nor destroyed. It can only be transformed from one form to another.

9. (i) The SI unit of energy is _____.

a) Newton b) Joule
c) Pascal d) Metre

9. (ii) What will be the change in the kinetic energy of a body if its velocity is tripled?

a) Kinetic energy becomes three times
b) Kinetic energy becomes one third
c) Kinetic energy becomes nine times
d) Kinetic energy becomes 1/9 th.

9. (iii) A gun fires a bullet with a muzzle speed v. The kinetic energy, E, of the bullet is given by

a) $E = mv^2$ b) $E = 2mv$
c) $E = v^2/2m$ d) $E = ½ mv^2$

9. (iv) A body of mass 4kg is dropped from a height of 10m. Its kinetic energy just before it touches the ground is
a) zero b) 400J
c) 40J d) 0.4J

9. (v) A light and a heavy body possess equal kinetic energy. Which of the following statements is true?

a) Both bodies will have the same velocity.
b) Both will also have the same momentum.
c) The heavier body will have more velocity than the lighter one.
d)The lighter body will have more velocity than the heavier one

Q10. Observe the data given below for a body of mass 100kg that starts from rest and answer the following questions. 2

Time (s)	Distance (m)
0	0
1	1
2	4
3	9
4	16
5	25
6	36

i. Find the acceleration of the body?
ii. Is the force acting on the body balanced or unbalanced? Give reason.

Q11 a) A particle moves over three quarters of a circle of radius r. What is the magnitude of its displacement? 2

b) Is uniform circular motion an accelerated motion? If yes how? If no, why?

Q12 (a) State Newton's second law of motion and derive its mathematical relationship. 3

(b) A bullet of mass 10 gram is fired with a rifle. The bullet takes 0.004 seconds to move through the barrel and leaves it with a velocity of 400 metre per second. Calculate the force exerted on the bullet by the rifle.

Q13 (a) State Universal law of gravitation and derive the expression for 'G' in terms of 'F' 5

(b) Why does the weight of an object become very less on the moon as compared to Earth? By what factor does it decrease on the moon?

(c) The ratio of gravitational force on Neptune to the gravitational force of the Earth is 9 : 8. Aarav weighs 792 N on earth. What will be his mass and weight on Neptune?

OR

(a) Define power and derive its expression in terms of force and velocity

(b) How is kilowatt different from kilowatt hour.

(c) A bulb consumes 500J of electrical energy in 20 seconds. Find the cost of electrical energy consumption for the month of March if the bulb is used for 4 hours everyday and the cost of electrical energy is Rs 10 per unit.

Section B CHEMISTRY **MM -27**

Q14 *Clouds, mist and fog are colloidal solutions of a:* 1

a.liquid in a gas

b. gas in a solid

c. solid in a gas

d.gas in a liquid

Q15 The ion of an element has 2 negative charges. Mass number of the atom is 32 and the number of neutrons is 16. What is the number of electrons in the ion? 1

(a) 16

(b) 32

(c) 18

(d) 14

Q16 Which of the following statement is correct? 1

a) An atom has equal number of electrons and neutrons.
b) An atom has equal number of electrons and protons.
c) An atom has equal number of neutrons and protons.
d) An atom has equal number of electrons, protons and neutrons.

Q17 Assertion: An atom of Argon is stable. 1
Reason: In argon, all the shells are completely filled.

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

Q18 Give one point of difference between a pure substance and a mixture. 1

Q19 Read the following and answer **any four** parts. 1x4

A solution is a homogeneous mixture of two or more substances. In a solution, solute is a substance dissolved in another substance, known as a solvent. You come across various types of solutions in your daily life. Lemonade, soda water etc. are all examples of

solutions. Usually we think of a solution as a liquid that contains either a solid, liquid or a gas dissolved in it. But, we can also have solid solutions (alloys) and gaseous solutions (air). In a solution there is homogeneity at the particle level. For example, lemonade tastes the same throughout. This shows that particles of sugar or salt are evenly distributed in the solution. The components of a colloidal solution are the dispersed phase and the dispersion medium. The solute-like component or the dispersed particles in a colloid form the dispersed phase, and the component in which the dispersed phase is suspended is known as the dispersing medium.A suspension is a mixture in which the solute particles do not dissolve but remain suspended throughout the bulk of the medium. Particles of a suspension are visible to the naked eye.

a) Give two examples of Colloid.
b) What are the components of a solution.
c) Why are alloys considered to be solutions.
d) What is the dispersion medium and dispersed phase in emulsion? Give an example of an emulsion from your daily life?
e) Why are True solutions considered to be stable?

Q20 Sulphuric acid has molecular formula H_2SO_4 (S-32u,H -1u.O-16u) 2

i) Calculate the molecular mass of H_2SO_4 .
ii) Calculate the number of moles present in 14g of sulphuric acid.

OR

Calculate the number of atoms present in 14g of sulphuric acid.

Q21 Write the steps showing the chemical formula for the following compounds. 2

(a) Ammonium nitrite
(b)Aluminium sulphate

Q22 (i) Two elements X and Y combine to form XY in the ratio of 1:35.5 by mass, 3
The mass of Y that combines with 2g of X will be
(a)7.1g
(b)3.55g
(c)71g
(d)35.5g

(ii) One mole of nitrogen gas is equal to(N- 14u)
(a)28g
(b)14g
(c)42g
(d)7g

(iii)The balancing of chemical equations is based on
(a) law of constant proportion
(b) law of conservation of mass
(c) law of multiple proportions
(d) all of these

Q23 The atomic number of Al is 13 and that of Cl is 17. How many electrons, protons and neutrons are present in Al^{+3} and Cl^{-} ions? 3
(Al - 27 u & Cl- 35u)

Q24 (a)Define law of definite proportion. 3

(b)A thin strip of iron with a mass of 7g is placed into a solution containing 21.0g of copper (II) sulfate and copper begins to form. After some time, the reaction stops because all the copper (II) sulfate has reacted. The mass of copper formed is found to be 8.60g. What mass of iron (II) sulfate has been formed in the reaction?

Q25 a) Give any two examples of isotopes used in medicine. 5
b) Why do isotopes have similar chemical properties?
c) If an element 'X' exists as two isotopes $_{35}X^{79}$ (49.7%) and $_{35}X^{81}$ (50.35 %)Calculate the average atomic mass of the element 'X'?
(d) Define isobars. Give an example.

Section C BIOLOGY **MM - 26**

Q26 How is nucleoid different from nucleus? 1

Q27 If you live in an overcrowded and poorly ventilated house, then you may suffer from which of the following diseases? 1

i. Cholera
ii. Typhoid
iii. COVID-19
iv. Chicken Pox

Choose the correct option among the following:

(a) (i) and (iii)
(b) (ii) and (iii)
(c) only(iii)
(d) only (iv)

Q28 **Assertion (A)**: Chromosomes are responsible for the transfer of characteristics from parents to offspring. 1

Reason (R): Chromosomes are present in the nucleus.

a) Both the Assertion and the Reason are correct, and the Reason is the correct explanation of the Assertion.

b) The Assertion and the Reason are correct, but the Reason is not the correct explanation of the Assertion.

c) Assertion is true but the Reason is false.

d) The statement of the Assertion is false but the Reason is true.

Q29 **Assertion (A) :** The inner lining of the intestine has tall epithelial cells. 1

Reason (R): Columnar epithelium facilitates absorption.

and secretion

a) Both the Assertion and the Reason are correct, and the Reason is the correct explanation of the Assertion.

b) The Assertion and the Reason are correct, but the Reason is not the correct explanation of the Assertion.

c) Assertion is true but the Reason is false.

d) The statement of the Assertion is false, but the Reason is true.

Q30 Read the passage given below and attempt any 4 out of question 30A-E 1x4

The cell membrane is the outermost covering of the cell that separates the contents of the cell from its external environment. It is made up of protein and lipid. It allows or permits the entry and exit of some materials in and out of the cell. Some substances like carbon dioxide or oxygen can move across the cell membrane by a process called diffusion. Osmosis is a special type of diffusion through a selectively permeable membrane. Membrane bound structures called organelles are also found in the cytoplasm. Some organelles like mitochondria and chloroplast are bounded by two membranes. Ribosomes synthesize proteins.

30 A) The cell membrane is made up of substances prepared by :

a. RER and Nucleus

b. SER and Plastids

c. RER and SER

d. Cellulose and SER

30 B) Which of these options are not a function of Ribosomes?

i) It helps in manufacture of protein molecules

ii) It helps in manufacture of enzymes

iii) It helps in manufacture of Lipid

iv) It helps in manufacture of starch molecules

a) (i) and (ii)

b) (ii) and (iii)
c) (iii) and (iv)
d) (i) and (iv)

30 C) What would happen when a plant cell is placed in plain water for 10 minutes?

a). It will swell.

b) It will shrink

c) It gets plasmolysed

d) It remains the same

30 D) Which of these have a cell wall?

a. Bacteria

b. Amoeba

c. Cheek cells

d. Viruses

30 E) **Assertion (A)**: De-shelled eggs swell up in hypotonic solution.

Reason (R): An egg is rich in protein.

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

Q31 BCG vaccine is given to a baby at the time of birth to prevent tuberculosis. 2

a) Is this a general or specific method of prevention of disease?
b) Explain how the vaccine helps to prevent infection.

Q32 a) Name the target organs of the following diseases. 2(1+1)

i) Japanese encephalitis

ii) Jaundice

b) Give two local effects of immune response to infectious disease.

Q33 a) Scientists find it difficult to make anti- viral medicines as compared to anti-bacterial medicines. Explain. 3(2+1)

b) List two means of spread of AIDS virus.

Q34 Give reasons for the following: 3

a) Skin is made up of stratified squamous epithelium.

b) Muscles can contract and relax to bring about movements.

c) Cells of sclerenchymatous tissue are thick walled.

Q35 Answer the following questions: 3

a) Elephantiasis, common in some parts of India is classified as a chronic disease. Justify

b) Why is penicillin used for treatment of acne? Explain.

c) A baby is suffering from loose motions. Identify the immediate and contributory cause of the infection.

Q36 a) Draw a neat diagram of parenchyma tissue as seen in the longitudinal section and label any two parts. (2+2+1)

b) Identify the following:

i) Tissue present in the veins of leaves.

ii) Tissue that increases the girth of the stem or root.

iii) Thick waxy coating present on the epidermis of desert plants.

iv) The living tissue that provides mechanical support in plants.

c) Why do branches of a plant not grow in length if they are cut from the tip?

OR

a) Draw a neat diagram of a cardiac muscle fibre and label any two parts.

b) Identify the type of tissue:

i) Tissue found in the inner lining of oesophagus.

ii) Which helps in receiving and transmitting the stimulus from brain to spinal cord.

iii) Flexible connective tissue present in the nose.

iv) Fills the space inside the organs and supports internal organs.

c) Why is a special type of epithelial tissue present in the respiratory tract?