Class IX Session 2023-24
Subject - Science
Sample Question Paper - 7

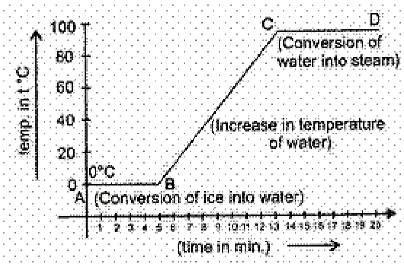
Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. The inferences drawn by the temperature versus time graph are **[1]**



A. During the melting, temperature of substance does not change.
B. Temperature rises after all amount of ice melts.
C. At a specific temperature water starts boiling and temperature remains the same during the conversion of water into steam.

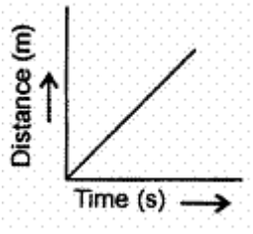
Which statement is correct regarding graph?

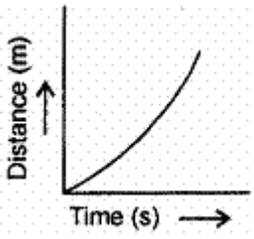
a) Only (C) is correct
b) All (A), (B) and (C) are correct
c) Only (B) is correct
d) Only (A) is correct

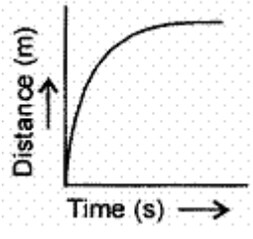
2. Organelle other than nucleus, containing DNA is **[1]**

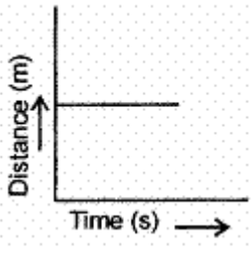
a) Endoplasmic reticulum
b) Golgi apparatus
c) Mitochondria
d) Lysosome

3. Which of the following figures represent uniform motion of moving object correctly? **[1]**

a) 

b) 

c) 

d) 

4. The process of crossing genetically dissimilar plants of a species is called **[1]**

a) All of these
b) interspecific cross
c) intervarietal cross
d) intergeneric cross

5. Which of the following sets includes simple permanent tissues? **[1]**

a) Collenchyma, parenchyma, Sclerenchyma
b) Pholem, xylem, collenchyma
c) Sclerenchyma, phloem, collenchyma
d) Parenchyma, phloem, sclerenchyma

6. Kitchen of the cells **[1]**

a) Golgi apparatus
b) Endoplasmic reticulum
c) Chloroplast
d) Mitochondria

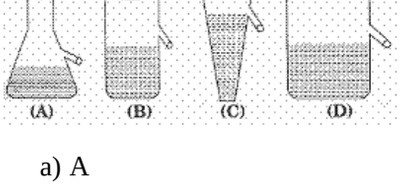
7. Atomicity of Chlorine and Argon is: **[1]**

a) Monoatomic and diatomic respectively
b) Diatomic and diatomic respectively.
c) Diatomic and monoatomic respectively.
d) Monoatomic and monoatomic respectively.

8. Which of the following components are seen in a slide of human cheek cell when observed under a microscope? **[1]**

a) Cell wall, cytoplasm, nucleus
b) Cell membrane, protoplasm, nucleus
c) Cell membrane, cytoplasm, nucleus
d) Cell wall, protoplasm, nucleus

9. Four students A, B, C and D while performing an experiment on establishing the relation between the loss of weight of small solid when fully immersed in tap water, and the weight of water displaced by it, used four different shapes of overflow cans containing water as shown :The arrangement, that would given correct results is that of student: **[1]**



a) A
b) D
c) B
d) C

10. What is the slope of the body when it moves with uniform velocity? **[1]**

a) positive
b) zero

c) may be positive or negative

d) negative

11. The isotopes of hydrogen which contain same number of electrons, protons and neutrons? **[1]**

a) Deuterium

b) Tritium

c) Pratium

d) Protium

12. The end of a long bone is connected to another bone by **[1]**

a) Ligament

b) Muscle

c) Cartilage

d) Tendon

13. The cell organelles (other than the nucleus) which contain DNA are: **[1]**

a) Plastids and lysosomes

b) Golgi apparatus and lysosomes

c) Plastids and mitochondria

d) Mitochondria and Golgi apparatus

14. Which will not give a stable solution even when stirred for sometimes? **[1]**

a) Milk in water

b) Common salt in water

c) Egg albumin in water

d) Sugar in water

15. Which of the following settles down when allowed to stand undisturbed doe sometimes? **[1]**

a) Copper sulphate solution

b) Blood

c) Muddy water

d) Solution of egg albumin in water

16. Using fertilizers in farming is an example of **[1]**

a) High cost production

b) Low cost production

c) None of these

d) No cost production

17. **Assertion (A):** Motion of satellites around their planets is considered as accelerated motion. **[1]**
Reason (R): During their motion, the speed remains constant, while the direction of motion changes continuously.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

18. **Assertion (A):** Ice floats on the surface of water. **[1]**
Reason (R): The density of both water and ice is same.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

19. **Assertion (A):** Parenchyma cells help in storage of food. **[1]**
Reason (R): Parenchyma cells are the main seats of photosynthesis.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** Cathode rays travel in straight lines. **[1]**

Reason (R): Cathode rays do not penetrate through thin sheets.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section B

21. A body moves along a circular path. How much work is done in doing so? Explain. **[2]**

OR

Can any object have momentum even if its mechanical energy is zero? Explain.

22. When a solid starts melting, its temperature does not rise till whole of it has melted. Explain. **[2]**

23. A ship sends out an ultrasound that returns from the seabed and is detected after 3.42 s. If the speed of ultrasound through seawater is 1531 m/s, what is the distance of the seabed from the ship? **[2]**

24. What happens to the heat energy which is supplied to the solid once it has started melting? **[2]**

25. Deduce Newton's first law from the second law. **[2]**

OR

Explain why some of the leaves may get detached from a tree if we vigorously shake the branch of the tree.

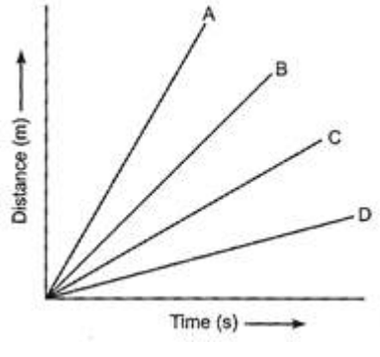
26. Calculate the number of neutrons present in the nucleus of an element 'X' which is represented as $^{31}_{15}X$. **[2]**

Section C

27. How do stethoscope and megaphone work on the principle of multiple reflections of sound? **[3]**

28. Compare the properties of electrons, protons and neutrons. **[3]**

29. Four cars A, B, C and D are moving on a leveled road. Their distance versus time graphs are shown in figure. Which car is the slowest. **[3]**



OR

A bus starting from rest moves with a uniform acceleration of 0.1 m s^{-2} for 2 minutes. Find:

a. the speed acquired.

b. the distance travelled.

30. Anil lives in a village and his school is 8 km away from his home. His father suggests buying a motor cycle to go to school. Anil opposes the idea and opts for a bicycle instead. **[3]**

a. Write the energy transformation taking place while Anil rides his bicycle.

b. Justify (the stand taken by Anil in your own words.

c. How can he convince his friends to do the same?

31. The following is the distance-time table of an object in motion: **[3]**

Time (in second)	**Distance (in metre)**
0	0

1	1
2	8
3	27
4	64
5	125
6	216
7	343

i. What conclusion can you draw about the acceleration? Is it constant, increasing, decreasing or zero?

ii. What do you infer about the force acting on the object?

32. Differentiate between RER and SER **[3]**

OR

Who discovered cell, and how?

33. Differentiate between sclerenchyma and parenchyma tissues. Draw a well-labeled diagram. **[3]**

Section D

34. Show that the weight of an object on the moon is $\frac{1}{6}$th of its weight on the earth. Given, the mass of the earth M_e = 6×10^{24} kg , mass of the moon, M_m =$7{\cdot}4\times10^{22}$ kg , The radius of the earth, R_e = 6400 km and radius of the moon, R_m = 1740 km. **[5]**

OR

What is the magnitude of the gravitational force between the earth and a 1 kg object on its surface? (Mass of the earth is 6×10^{24} kg and radius of the earth is6.4×10^{6} m).

35. Make a comparison and write down ways in which plant cells are different from animal cells. **[5]**

OR

What is membrane biogenesis? How is plasma membrane formed during this process?

36. Non-metals are usually poor conductors of heat and electricity. They are non-lustrous, non-sonorous, non-malleable and are coloured. **[5]**

i. Name a lustrous non-metal.

ii. Name a non-metal which exists as a liquid at room temperature.

iii. The allotropic form of a non-metal is a good conductor of electricity. Name the allotrope.

iv. Name a non-metal which is known to form the largest number of compounds.

v. Name a non-metal other than carbon which shows allotropy.

vi. Name a non-metal which is required for combustion.

Section E

37. **Read the text carefully and answer the questions:** **[4]**

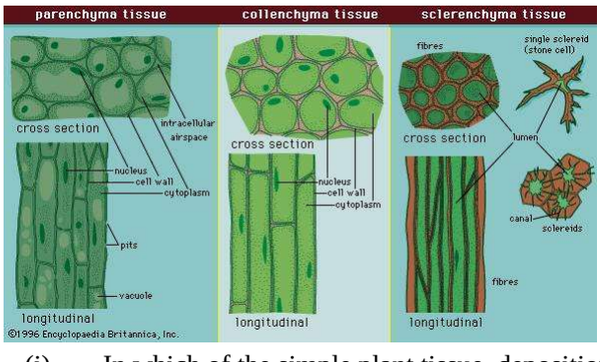
Permanent tissues are of two types that is Simple permanent tissues and Complex permanent tissues.

Simple permanent tissues subdivided as follows:

i. **Parenchyma:** Tissues provide support to plants. They are loosely packed and has large intracellular space. Parenchyma with chlorophyll which performs photosynthesis is called chlorenchyma.

ii. **Collenchyma:** Tissue are thickened at the corners, have very little intercellular space. It allows easy bending of various parts of a plant without breaking.

iii. **Sclerenchyma:** Cells of this tissue are dead and commonly seen in the husk of a coconut.



(i) In which of the simple plant tissue, deposition of lignin is found? Also describe lignin.

(ii) Why is cork impervious to gases and water?

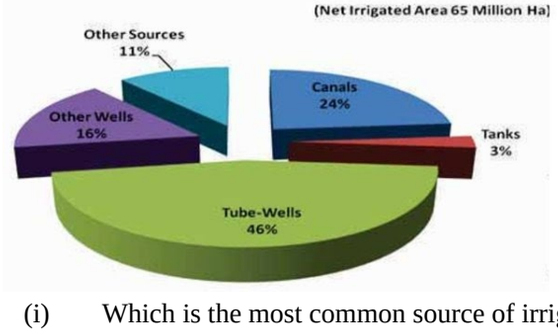
OR

Which type of tissue is present in the cortex of the root and veins of the leaves?

38. **Read the text carefully and answer the questions:** **[4]**

Irrigation

The process of supplying water to crop plants through human efforts by means of canals, wells, reservoirs, tube wells etc., is known as irrigation. Most agriculture in India is dependent on timely monsoons and sufficient rainfall spread through most of the growing season. However, the extra water required by crops is met through irrigation.



(i) Which is the most common source of irrigation?

(ii) Mention the various sources of irrigation.

(iii) Which is the least use source of irrigation?

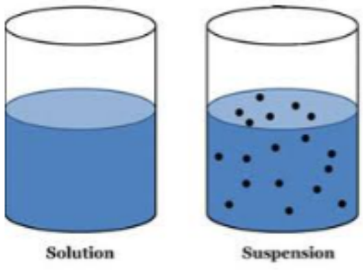
OR

What are the other sources of irrigation?

39. **Read the text carefully and answer the questions:** **[4]**

A suspension is a heterogeneous 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. The particles of a suspension scatter a beam of light passing through it and make its path visible. Due to the relatively smaller size of particles, as compared to that of a suspension, the mixture appears to be homogeneous. The scattering of a beam of light is called the Tyndall effect. 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.



(i) Differentiate between Dispersed phase and Dispersion medium?

(ii) Differentiate between Homogeneous and Heterogeneous mixture?

(iii) What is emulsion?

OR

Give an example of solid sol?

Solution

Section A

1.

(b) All (A), (B) and (C) are correct

Explanation:

A. During the change of state, given heat is used to change the state. So temperature remains same. AB and CD parts show constant temperature

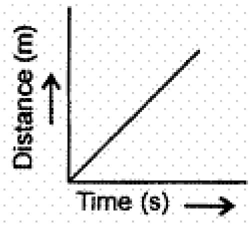
B. BC part represents increase in temperature.

C. CD is water starts boiling and temperature remains the same during the conversion of water into steam.

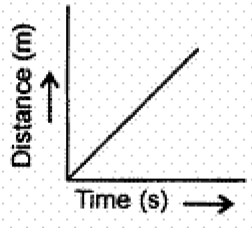
2.

(c) Mitochondria

Explanation: A cell can contain DNA in an area other than the nucleus and the mitochondria.

3. **(a)** 

Explanation: Uniform motion of a moving object



4.

(c) intervarietal cross

Explanation: When the crossing is done between different varieties of plants, it is called intervarietal. In this case, plants of the same species but from different populations are cross-bred to produce a new variety.

5. **(a)** Collenchyma, parenchyma, Sclerenchyma

Explanation: Two simple permanent tissue in plants are parenchyma and collenchyma while two complex permanent tissue in plants are xylem and phloem. Sclerenchyma tissue is dead simple permanent tissue of the plant.

6.

(c) Chloroplast

Explanation: Chloroplasts are special structures present only in plant cells. With the help of this chlorophyll, the plants prepare their food in the presence of water, sunlight and oxygen. Hence, chloroplasts are called the kitchen of a plant cell.

7.

(c) Diatomic and monoatomic respectively.

Explanation: Atomicity is the total number of atoms present in one molecule of an element or a compound. Chlorine molecule (Cl_2) is diatomic i.e. a molecule of chlorine contains 2 atoms of chlorine. Argon is an inert gas and an atom of Argon is capable of independent existence. Hence, Argon is monoatomic (Word "mono" refers to the single atom).

8.

(c) Cell membrane, cytoplasm, nucleus

Explanation: The cells do not have a cell wall. However, each cell has a thin cell membrane. A large vacuole is present at the center of each cell and is surrounded by the cytoplasm. A lightly stained cytoplasm is observed in each cell. A deeply stained nucleus is observed at the center of each cell.

9.

(d) C

Explanation: Water has to be filled to the level of overflow.

10.

(b) zero

Explanation: The slope is zero (because the slope for the velocity time graph gives the acceleration).

11. **(a)** Deuterium

Explanation: Hydrogen element has three isotopes: protium, deuterium, and tritium having the same atomic number of 1 but different mass number 1, 2, 3 respectively. Deuterium is isotopes of hydrogen which contain the same number of electrons, protons, and neutrons.

12. **(a)** Ligament

Explanation: Two bones can be connected to each other by another type of connective tissue called the ligament.

13.

(c) Plastids and mitochondria

Explanation: In eukaryotes, DNA is generally membrane-bound. Hence in eukaryotes, it is found within the nucleus, mitochondria (animal cell), and plastids (chloroplasts, plant cells).

14.

(c) Egg albumin in water

Explanation: Egg albumin in water will not give a stable solution. The protein in egg albumin coagulated to form a lump in hot water.

15.

(c) Muddy water

Explanation: Muddy water will settle down because particles are heavy and settle due to gravity. Setting down of coarse particles under the influence of gravity is called sedimentation. During sedimentation, heavier particles settle down faster than finer particles.

16. **(a)** High cost production

Explanation: High cost production

17. **(a)** Both A and R are true and R is the correct explanation of A.

Explanation: Satellites revolve around their planets in almost circular orbits with constant speed. Thus, during their motion, the speed remains constant, while the direction of motion changes continuously. As a result, there is a change in their velocity. Therefore, the motion of satellites around their planets is considered as accelerated motion.

18.

(c) A is true but R is false.

Explanation: Ice floats on the surface of the water because the density of water is more than ice. Ice is lighter than water due to open spaces in its crystalline structure.

19.

(b) Both A and R are true but R is not the correct explanation of A.

Explanation: The function of the parenchymatous tissue is to store food material in the form of starch, proteins, oils, and fats. The parenchymatous tissues in root and stem tubers are good examples. The xylem and phloem parenchyma also store starchy food. The parenchymatous cells that contain chloroplasts are the main seats of photosynthesis, e.g., palisade cells of the leaf.

20.

(c) A is true but R is false.

Explanation: Cathode rays can penetrate through thin sheets.

Section B

21. In case of a body moving along a circular path, the force (centripetal) is always along the radius while displacement is tangential. Hence work done W = Fs cos 90^o = 0 as angle between F and s is 90^o.

OR

No, Zero mechanical energy means that there is no potential energy and no kinetic energy. Therefore, if kinetic energy is zero, velocity becomes zero and hence, there will be no momentum.

22. The heat energy which is now being supplied is used up to bring a change in physical state only. After completion of physical change by absorption of latent heat of fusion the temperature can be raised.
23. We have given that,
    The time between transmission and detection, t = 3.42 s
    Speed of ultrasound in seawater, v = 1531 m/s
    Therefore, Distance travelled by the ultrasound
    = 2 $\times$ depth of the sea = 2d
    where d is the depth of the sea.
    2d = speed of sound $\times$ time
    = 1531 m/s $\times$ 3.42 s = 5236 m
    d = $\frac{5236}{2}$ m = 2618 m
    Thus, the distance of the seabed from the ship is 2618 m or 2.62 km.
24. The heat energy supplied is taken up by solid particles and helps in their melting or fusion. It is known as latent heat of fusion.
25. According to the second law of motion, F = ma--------(i)
    If no external force is acting on the object at rest,we can write,
    F = 0-------(ii)
    From (i) and (ii),we get
    $m \times a = 0$
    Since, m cant be zero,a=0.
    According to Newton's second law of motion
    F= rate of change of momentum
    $F = \frac{mv-mu}{t}$
    If F=0, then

    $\frac{mv-mu}{t} = 0$
    or, $v - u$=0 ('m' cant be 0)
    so, $v = u$ (for whatever time t is taken.)
    This means that if no external force is applied on the moving object,then its initial and final velocities are equal. It means that the body will continue to be in the state of uniform motion along a straight line if no external force acts on it.

    OR

    When the branch is suddenly set in motion, the leaves attached to it tend to continue in their state of rest because of inertia of rest. It generates a lot of strain at the junction of leaves and the branch. Because of this strain some leaves get detached from the branch.
26. From the given symbol of 'X', we have mass number = 31 and atomic number = 15.
    No. of protons = Atomic number = 15 ... (1)
    Mass number = 31
    or No. of protons + No. of neutrons = 31
    or Number of neutrons = 31 - Number of protons
    or Number of neutrons = 31 - 15 [From (1)]
    or Number of neutrons = 16
    The number of neutrons present in the nucleus of an element $^{31}_{15}X$ is **16**.

Section C

27. i. A megaphone works on the principle of multiple reflections of sound. When a person speaks into the narrow end of the megaphone tube, the sound waves produced by his voice are prevented from spreading by successive reflections from the wider end of the megaphone tube. Due to this, the sound of the person can be heard over a longer distance.

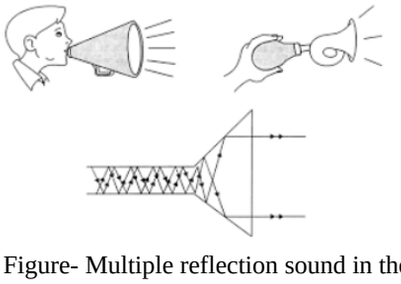


Figure- Multiple reflection sound in the megaphone.

ii. The stethoscope is a medical instrument used by doctors for listening to the sounds produced within the human body, mainly in the heart and the lungs. The doctor puts the earpiece of the stethoscope into his ears and places the chest-piece above the part of the patient's body which is to be examined. The sound of heartbeats reaches the doctor's ears by the multiple reflections of the sound waves through the stethoscope tube. Thus, it works on the principle of multiple reflections of sound.

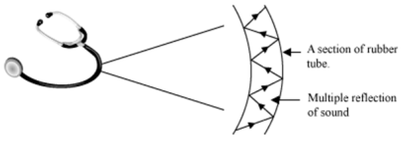


Figure- Multiple reflection sound in the stethoscope.

28.

Proton	Neutron	Electron
(i) It is positively-charged sub-atomic particle.	(i) It is neutral sub-atomic particle.	(i) It is negatively-charged sub-atomic particle.
(ii) Its mass is equivalent to a hydrogen atom i.e. 1 a.m.u	(ii) It mass is equal to the mass of a proton.	(ii) Its mass is 1/1838 of the mass of a proton.
(iii) It is present inside the nucleus of an atom.	(iii) It is also found inside the atomic nucleus.	(iii) It is found outside the nucleus of an atom.

29. Speed = Slope of distance - time graph. The smaller the slope, the smaller is the speed.

OR

a. u = 0, a = 0.1 ms^{-2}, t = 2min = 120 seconds.

v = u + at = 0 + 0.1 $\times$ 120 = 12 ms^{-1}

so speed acquired = v = 12ms^{-1}

b. S = 0 $\times$ 120 + $\frac{1}{2}$ $\times$ 0.1 $\times$ 120^2 = 720 m.

30. a. chemical energy of food converts to heat and then to muscular energy which converts into kinetic energy on paddling the cycle.

b. Anil wisely opts for the bicycle as he was concerned towards environment, to avoid noise and air pollution. Also cycling is beneficial for health.

c. By informing them about the harms of pollution and putting forward the advantages of cycling.

31. i. Here, initial velocity, u = 0

Using Newton's second law of motion, s = ut + $\frac{1}{2}at^2 = \frac{1}{2}at^2$ [$\because$ u = 0]

We get, $a = \frac{2s}{t^2}$

Time (in second)	Distance (in metre)	a = 2 s/t^2
0	0	0
1	1	2
2	8	4
3	27	6
4	64	8
5	125	10
6	216	12
7	343	14

Thus, acceleration is increasing.

ii. Since acceleration is increasing, so the net unbalanced force is acting on the object.

32.

Sr.No.	SER	RER
1.	Ribosomes are absent.	Ribosomes occur over the surface of RER.
2.	Synthesis is specialised to synthesize lipids and steroids.	Synthesis is specialised to synthesize proteins.
3.	The products do not pass into lumen.	The products pass into lumen of E.R. for transport to other

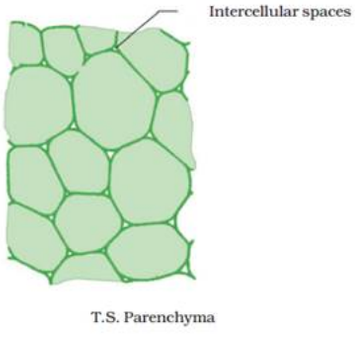
		places.
4.	Less stable	More stable
5.	Found in Epithelial cells, Intestinal cells, Sarcoplasmic Reticulum	Found in Pancreatic Exocrine cells

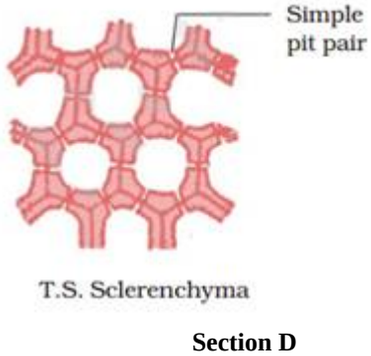
OR

The cell was first discovered and named by Robert Hooke in 1665. He saw that the cork resembled the structure of a honeycomb consisting of many little compartments. Cork is a substance which comes from the bark of a tree. This was in the year 1665 when Hooke made this chance observation through a self-designed microscope. Robert Hooke called these boxes cells. In this way he discovered the cells.

33.

Parenchyma	Sclerenchyma
Cells are live.	Cells are dead.
Cells have thin cell walls.	The cell wall is thick due to the deposition of lignin.
Intercellular spaces are present between cells.	No intercellular spaces are found between the cells.
Cells are oval in shape.	Cells are long in shape.
Some cells contain chloroplast.	The chloroplast is absent.
Storage of food is a major function.	Structural rigidity is the main function.
Found in soft parts.	Found in hard parts.





Section D

34. Suppose the mass of the moon is M_m and its radius is R_m. Let a body of mass m is placed on the surface of the moon.

Therefore, the weight of the body on the moon, $W_m = mg' = \frac{GM_m m}{R_m^2}$ .....(1)

Mass of body, m will remain same on earth and moon.

Here, The weight of the same body on the earth's surface, $W_e = mg = \frac{GM_e m}{R_e^2}$ .....(2)

Where M_e = Mass of earth and R_e = Radius of the earth.

Dividing equation (1) by (2), we get

$\frac{W_m}{W_e} = \frac{M_m}{M_e} \times \frac{R_e^2}{R_m^2}$ .....(3)

Now, the mass of the earth, $M_e = 6 \times 10^{24}$ kg (Given)

mass of the moon, $M_m = 7{\cdot}4 \times 10^{22}$ kg (Given)

The radius of the earth, R_e = 6400 km and radius of the moon, R_m = 1740 km

Now, Putting these values in equation (3), we get

$\frac{W_m}{W_e} = \frac{7.4 \times 10^{22} kg}{6 \times 10^{24} kg} \times (\frac{6400\ km}{1740\ km})^2$

or $\frac{W_m}{W_e} \approx \frac{1}{6}$ or $W_m = \frac{W_e}{6}$ Hence proved.

Therefore, The weight of the body on the moon is about one-sixth of its weight on the earth.

OR

$F_{gravitation} = \frac{G \times M_e \times m_o}{r^2}$

$= \frac{6.67\times10^{-11}\times6\times10^{24}\times1}{(6.4\times10^{6})^{2}}$

$= \frac{6.67\times6\times10^{-11+24}}{6.4\times6.4\times10^{12}}$

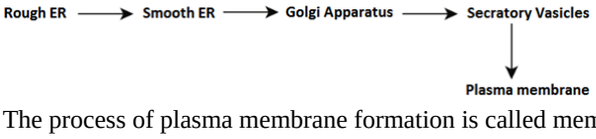
$= \frac{6.67\times6}{6.4\times6.4}\times10^{-11+24-12}$

$= 0.9770\times10N = 9.770N$

35.

Plant cell	Animal cell
1. cell wall is present.	1. cell wall is absent.
2. Plastids are present.	2. Plastids are absent.
3. They have dictyosomes instead of Golgi body.	3. They have Golgi apparatus.
4. centrosomes and centrioles are absent.	4. centrosomes and centrioles are present.
5. Vacuoles are larger in size.	5. vacuoles are smaller in size.
6. Daughter cells separate from each other due to formation of cell plate.	6. Daughter cells separate from each other due to contrition or furrow formation.

OR



The process of plasma membrane formation is called membrane biogenesis. Following organelles are involved in this process: The proteins and lipids are first synthesized in the rough endoplasmic reticulum and the smooth endoplasmic reticulum, respectively. These are then transported to the Golgi complex for their modification. After modification, these are transported to the cell surface through vesicles which bud off from the Golgi complex to fuse with the cell membrane and form a part of the membrane.

36. i. Iodine
ii. Bromine
iii. Graphite
iv. Carbon
v. Sulphur, phosphorus
vi. Oxygen

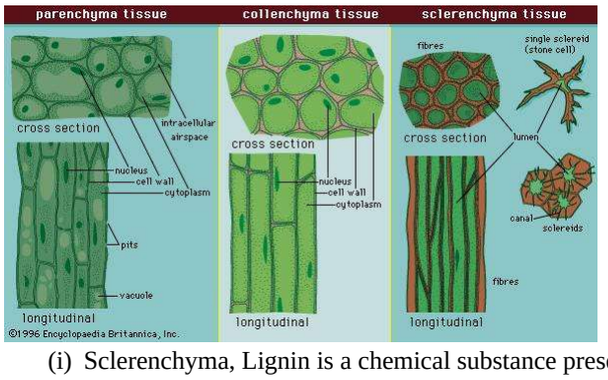
Section E

37. **Read the text carefully and answer the questions:**

Permanent tissues are of two types that is Simple permanent tissues and Complex permanent tissues.

Simple permanent tissues subdivided as follows:

i. **Parenchyma:** Tissues provide support to plants. They are loosely packed and has large intracellular space. Parenchyma with chlorophyll which performs photosynthesis is called chlorenchyma.
ii. **Collenchyma:** Tissue are thickened at the corners, have very little intercellular space. It allows easy bending of various parts of a plant without breaking.
iii. **Sclerenchyma:** Cells of this tissue are dead and commonly seen in the husk of a coconut.



(i) Sclerenchyma, Lignin is a chemical substance present in the cell wall of plant that acts as cement and hardens it.

(ii) Due to presence of a chemical substance called suberin.

OR

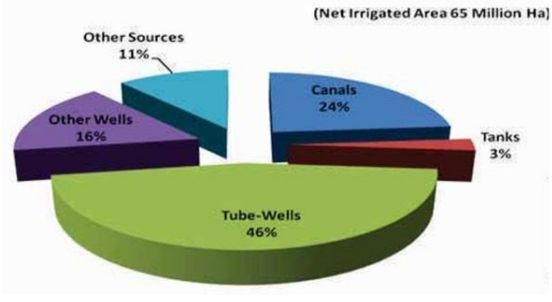
The parenchyma tissue is present in the cortex of roots and sclerenchyma tissue is present in the veins of the leaves.

38. **Read the text carefully and answer the questions:**

Irrigation

The process of supplying water to crop plants through human efforts by means of canals, wells, reservoirs, tube wells etc., is

known as irrigation. Most agriculture in India is dependent on timely monsoons and sufficient rainfall spread through most of the growing season. However, the extra water required by crops is met through irrigation.



(i) The most common source of irrigation is tube wells. Irrigation is the artificial process of applying controlled amounts of water to land to assist in the production of crops.

(ii) The various sources of irrigation are canals, tanks, tube wells, other wells, and other sources like rainwater harvesting.

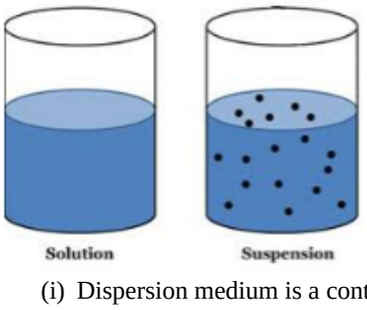
(iii) The last source of irrigation tanks.

OR

The other sources include rainwater harvesting and watershed management.

39. **Read the text carefully and answer the questions:**

A suspension is a heterogeneous 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. The particles of a suspension scatter a beam of light passing through it and make its path visible. Due to the relatively smaller size of particles, as compared to that of a suspension, the mixture appears to be homogeneous. The scattering of a beam of light is called the Tyndall effect. 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.



(i) Dispersion medium is a continuous medium in which the dispersed phase is distributed throughout. Dispersed phase is the phase that is composed of particles that are distributed through another phase.

(ii) Homogenous mixtures generally have a uniform composition throughout the mixture whereas Heterogeneous mixtures have composition which may vary from point to point. In Homogenous mixtures, the whole mixture is in the same phase whereas in Heterogeneous mixture, substances can be of two phases and layers may separate.

(iii) An emulsion is a mixture of two or more liquids that are usually immiscible but under specific transforming processes will adopt a macroscopic homogeneous aspect and a microscopic heterogeneous one.

OR

Coloured gemstone.