SAMPLE PAPER - 9

Class 09 - Science

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. A pressure cooker work on the basis of which of the following principle? **[1]**

   a) By increases the quantity of liquid.

   b) Boiling point is raised by increasing the pressure on the surface of the liquid.

   c) By decreases the quantity of liquid.

   d) Boiling point is lowered by increasing the pressure on the surface of the liquid.

2. 70-80% of the volume of a mature plant cell is occupied by: **[1]**

   a) cytoplasm

   b) vacuole

   c) nucleus

   d) endoplasmic reticulum

3. A body moving in a circle of radius r covers $\frac{3}{4}$th of the circle. The ratio of the distance to displacement is: **[1]**

   a) $3 : 2\sqrt{2}$

   b) $3\pi : 2\sqrt{2}$

   c) $3\sqrt{2} : 2\pi$

   d) $2\sqrt{2}: 3\pi$

4. Which verity of honeybee use commercial production of honey? **[1]**

   a) Apis dorsata

   b) Apis mellifera

   c) Apis indica

   d) Apis florae

5. Choose the chemical compound with which the specimen is temporarily mounted. **[1]**

a) Water

b) Glycerine

c) Alcohol

d) Salt solution

6. A prokaryotic cell does not possess: **[1]**

a) nuclear membrane

b) both cell membrane and nuclear membrane

c) cell membrane

d) cell wall

7. How many atoms of Sulphur are present in 0.5 moles of SO_2? **[1]**

a) 6.022×10^{23}atoms

b) 3.011×10^{23} atoms

c) None of these

d) 9.035×10^{23} atoms

8. Bone matrix is rich in **[1]**

a) fluoride and calcium

b) calcium of potassium

c) calcium and phosphorus

d) phosphorus and potassium

9. In a spring balance the space between 0 and 25 g marks is divided into 10 equal parts. The least count of spring balance is: **[1]**

a) 15 g wt

b) 2.5 g wt

c) 25 g wt

d) 0.25 g wt

10. The area under the velocity-time graph gives the value of: **[1]**

a) velocity

b) acceleration

c) mass

d) distance travelled

11. Which of the following has the maximum number of molecules? **[1]**

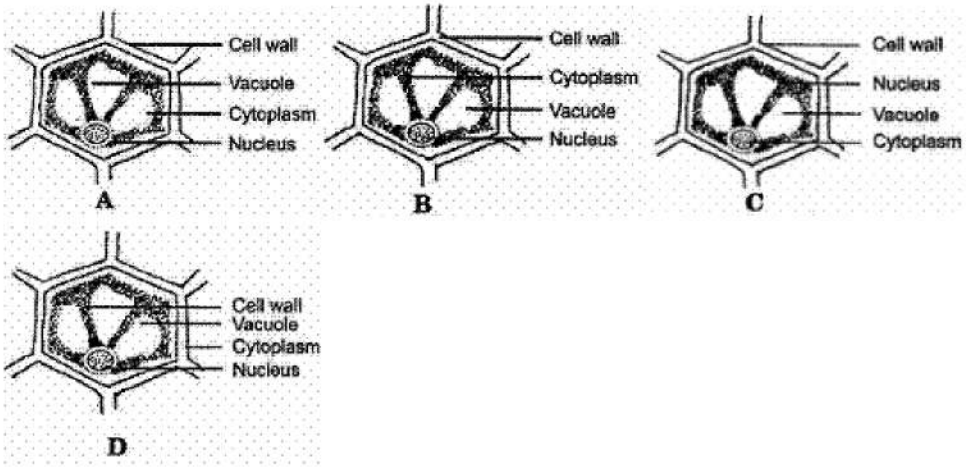
a) 1 g of CO_2

b) 1 g of N_2

c) 1 g of H_2

d) 1 g of CH_4

12. Four students marked an onion epidermal cell seen under high power microscope as below. Identify the correctly labeled diagram: **[1]**



a) A

b) D

c) B

d) C

13. The site of detoxification in liver cells is: **[1]**

a) SER

b) lysosome

c) ribosome d) RER

14. What information do we get from the molecular formula? **[1]**

a. It represents one molecule of the substance.

b. It does not tell the name of the substance.

c. It tells about the type of atoms.

d. It represents the formula mass unit of the substance.

a) (b) and (c) are correct b) All of these

c) (a) and (b) are correct d) (a), (c) and (d) are correct

15. **Statement A:** Brass is a solution while gun powder is not. **[1]**

Statement B: Air represents a solution in terms of science.

Which of the two statements is true?

a) Statement A b) Neither Statement A nor Statement B.

c) Statement B d) Both Statement A and B

16. Which of one of the following nutrients is not available in fertilisers. **[1]**

a) Iron b) Potassium

c) Nitrogen d) Phosphorous

17. **Assertion (A):** A boy is enjoying a ride on a merry-go-round which is moving at a constant speed of 10 m/s. The boy is in uniform accelerated motion. **[1]**

Reason (R): A body has a uniform acceleration if it travels in a straight line and its velocity first decreases then increases by equal amounts in equal intervals of time.

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):** A gas fills completely the vessel in which it is kept. **[1]**

Reason (R): Intermolecular force of attraction between the particles of gas is negligible.

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):** Blood is a fluid connective tissue. **[1]**

Reason (R): It is composed of plasma, platelets, red blood cells, and white blood cells.

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):** Isotopes are electrically neutral. **[1]**

Reason (R): Isotopes are species with same mass number but different atomic numbers.

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. The volume of 50 g substance is 20 cm^3. If the density of water is 1 g cm^{-3}, will the substance float or sink? **[2]**

OR

A person is holding a bucket by applying a vertical force of 10 N. He moves a horizontal distance of 5 m and then climbs up a vertical distance of 10 m Calculate the total work done by him.

22. What is evaporation? What are the factors affecting it? **[2]**

23. Sound is produced due to a vibratory motion, then why a vibrating pendulum does not produce sound? **[2]**

24. The Latent heat of vaporization of steam is more than that of the boiling water. Explain. **[2]**

25. When a carpet is beaten with a stick, dust comes out of it. Explain. **[2]**

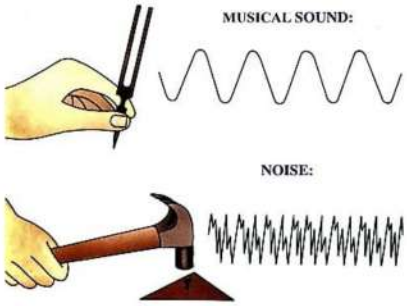
OR

Two objects each of mass 1.5 kg, are moving in the same straight line but in opposite directions. The velocity of each object is 2.5 ms^{-1} before the collision during which they stick together. What will be the velocity of the combined object after collision?

26. Hydrogen has three isotopes. State the composition of their nuclei and write their mass number. Also represent them in the form of symbols. **[2]**

Section C

27. Observe the following diagram and answer the following questions: **[3]**



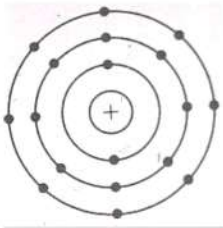
i. What is the difference between longitudinal and transverse wave?

ii. Mention the three characteristics of sound.

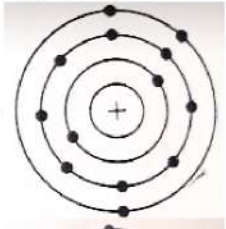
iii. What is the crest and trough?

28. Find out the valency of atoms represented by the following figures. **[3]**

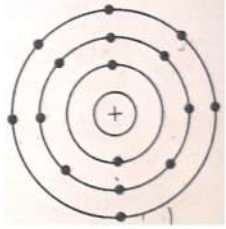
i.



ii.



iii.



29. Write a short note on uniform circular motion. **[3]**

OR

The velocity of a body in motion is recorded every second as shown-

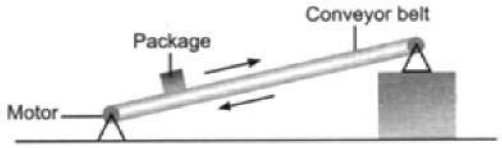
time (s)	0	1	2	3	4	5	6	7	8	9	10
velocity (m/s)	60	54	48	42	36	30	24	18	12	6	

Calculate the -

a. acceleration

b. distance travelled and draw the graph.

30. Figure shows a conveyor belt transporting a package to a raised platform. The belt is driven by a motor. **[3]**



i. State three types of energy, other than gravitational potential energy, into which the electrical energy supplied to the motor is converted.

ii. The mass of the package is 36 kg. Calculate the increase in the gravitational potential energy (p.e.) of the package when it is raised through a vertical height of 2.4 m.

iii. The package is raised through the vertical height of 2.4 m in 4.4 s. Calculate the power needed to raise the package.

iv. Assume that the power available to raise package is constant. A package of mass greater than 36 kg is raised through the same height. Suggest explain the effect of this increase in mass on the operation of the belt.

31. Give reason for the following: **[3]**

i. Road accidents occurring due to high speeds are much worse than accidents due to low speeds of vehicles.

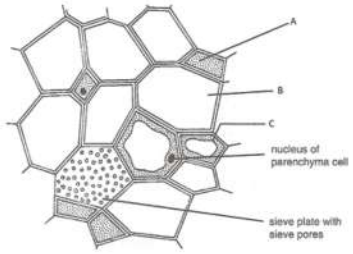
ii. When a motorcar makes a sharp turn at a high-speed, passenger tends to get thrown to one side.

32. Differentiate between active and passive transport. **[3]**

OR

What are the differences between cell wall and cell membrane?

33. Study the following diagram of phloem and answer the following questions: **[3]**



i. Identify A, B and C in the given diagram.

ii. What term is used for the end walls of the B?

iii. What are the two functions performed by C?

Section D

34. A car falls off a ledge and drops to the ground in 0.5 s. Let g = 10 ms^{-2} (for simplifying the calculations). **[5]**

i. What is its speed on striking the ground?

ii. What is its average speed during the 0.5 s?

iii. How high is the ledge from the ground?

OR

i. Write the formula to find the magnitude of the gravitational force between the earth and an object on the earth's surface.

ii. Derive how does the value of gravitational force F between two objects change when

a. distance between them is reduced to half and

b. mass of an object is increased four times.

35. Grass looks green, papaya appears yellow. Which cell organelle is responsible for this? **[5]**

OR

Draw a neat labelled diagram of an animal cell.

36. i. Under which category of mixtures will you classify alloys and why? **[5]**

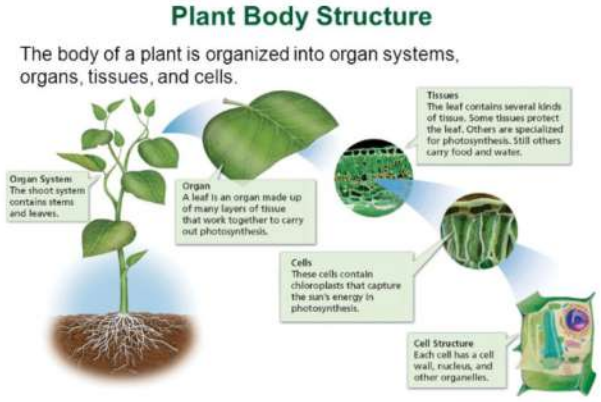
ii. Whether a solution is always liquid or not. Comment.

iii. Can a solution be heterogeneous?

Section E

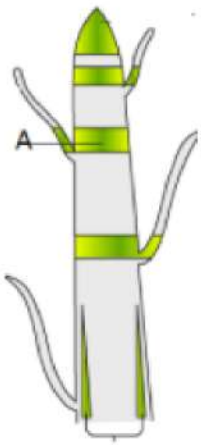
37. **Read the text carefully and answer the questions:** **[4]**

Plants are stationary or fixed they don't move. Since they have to be upright, they have a large quantity of supportive tissue. The supportive tissue generally has dead cells. Animals, on the other hand, move around in search of food, mates and shelter. Another difference between animals and plants is in the pattern of growth. The growth of plants occurs only in certain specific regions. New cells produced by meristem are initially like those of meristem itself, but as they grow and mature, their characteristics slowly change and they become differentiated as components of other tissues. The girth of the stem or root increases due to lateral meristem (cambium). Cells of meristematic tissue are very active, lack vacuoles.



(i) Is meristematic tissue composed of a single type of cell?

(ii) Identify A in the given figure



OR

Which meristematic is present at the growing tips of stems and roots?

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

Poultry is the fastest growing segment of animal husbandry in India despite the fact that the majority of Indians are vegetarians. Poultry yields eggs from layers that are female birds. It yields meat from two sources, young birds or broilers, and non-productive layers. The indigenous breeds include Busra, Chhattisgarh, Kadaknath, and Aseel. They are slow growing. The yield of eggs is small. The exotic breeds are White Leghorn, Rhode Island Red, Plymouth Rock, and Australorp. The exotic breeds are fast growing and yield a large number of eggs (180-280 per year). Many of the exotic breeds have been acclimatised in our country. A number of high-yielding hybrids have been developed, e.g., ILS-82, B-77, HH-260.

(i) What is Broilers?

(ii) When are broilers dressed?

(iii) Which Indian poultry bird is used in cock fighting?

OR

Mention one poultry bird that yields the maximum number of eggs per annum.

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

Sodium chloride, commonly known as salt, is an ionic compound with the chemical formula NaCl, representing a 1:1 ratio of sodium and chloride ions. With molar masses of 22.99 and 35.45 g/mol respectively, 100 g of NaCl contains 39.34 g Na and 60.66 g Cl. Ravi prepared a solution of sodium chloride by mixing 5.85 g of salt in 1 litre of water.

(i) Molar mass of sodium chloride.

(ii) Number of moles of sodium chloride dissolved. [Atomic masses of sodium and chlorine are 23 u and 35.5 u respectively]

(iii) Concentration of the sodium chloride solution.

OR

Compute the number of ions present in 5.85 g of sodium chloride .

Solution

SAMPLE PAPER - 9

Class 09 - Science

Section A

1. **(b)** Boiling point is raised by increasing the pressure on the surface of the liquid.
   Explanation: Pressure cookers work on the principle that as the pressure increases the boiling point of water increases and the steam is produced from water. The pressure cookers are designed in such a way it controls the escape of steam. When the steam is not allowed to escape, it builds up more pressure which allows the water in the cooker to start boiling with an increase in temperature. Thus higher the temperature of the water makes cooking faster. And the steam covering the entire cooker completely helps to heat and cook food evenly and quickly.

2. **(b)** vacuole
   Explanation: Vacuoles occupy a very large part of the cell volume in plants. Upton 95% of cellular volume can be occupied by them.

3. **(b)** $3\pi : 2\sqrt{2}$
   Explanation: r' = $r\sqrt{2}$ displacement
   distance = $\frac{3\pi r}{2}$
   ratio = $\frac{\frac{3\pi r}{2}}{r\sqrt{2}}$
   ratio = $3\pi : 2\sqrt{2}$

4. **(b)** Apis mellifera
   Explanation: The bee variety that is commonly used for commercial honey production is the Apis mellifera which is called the European honey bee or the western honey bee.

5. **(b)** Glycerine
   Explanation: Glycerine is a good dehydrating agent. It avoids the drying of the specimen. Besides, glycerine tends to reflect light due to its refractive nature. As a result of it, the image appears clearer under the microscope. Due to these reasons, glycerine is used while preparing a temporary mount of leaf peel.

6. **(a)** nuclear membrane
   Explanation: Prokaryotes do have their genomic DNA concentrated and localized to a small area within the cell (nucleoid region). So it's not entirely accurate to say that prokaryotes don't have a nucleus.

7. **(b)** 3.011×10^{23} atoms
   Explanation: Each molecule SO_2 contains one atom of Sulphur and two atoms of Oxygen.

   So, 6.022×10^{23} molecules of SO_2 will contain 6.022×10^{23} atoms of Sulphur.

   6.022×10^{23} molecules of SO_2 make up one mole of SO_2,

   Since 1 mole of SO_2 contains 6.022×10^{23} atoms of Sulphur,

   Therefore, 0.5 moles of SO_2 will contain $0.5 \times 6.022 \times 10^{23}$ atoms or 3.011×10^{23} atoms of Sulphur.

8. **(c)** calcium and phosphorus
   Explanation: The bone is a connective tissue with hard matrix, composed of calcium and phosphorus. A bone is connected by another bone with another connective tissue called ligaments. A bone is connected by muscle with another connective tissue called tendon.

9. **(b)** 2.5 g wt
   Explanation: L.C. = $\frac{25-0}{10}$ = $\frac{25}{10}$ = 2.5 g wt

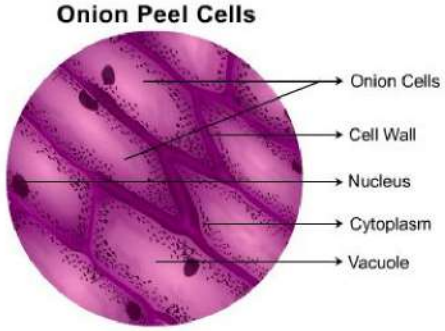
10. **(d)** distance travelled
    Explanation: The area under a velocity-time graph represents the distance covered and the gradient of a velocity-time graph represents the acceleration.

11. **(c)** 1 g of H_2

Explanation: 1 g of H_2 (Molar mass 2 g) contains 3.011×10^{23} molecules, 22 g of CO_2 (Molar mass 44 g) contains 3.011×10^{23} molecules, 14 g of N_2(Molar mass 28 g) contains 3.011×10^{23} molecules and 8 g of CH_4(Molar mass 16 g) contains 3.011×10^{23} molecules.

12. **(c)** B

Explanation: As in all plant cells, the cell of an onion peel consists of a cell wall, cell membrane, cytoplasm, nucleus and a large vacuole. The nucleus is present at the periphery of the cytoplasm. The vacuole is prominent and present at the centre of the cell. It is surrounded by cytoplasm. The presence of a cell wall and a large vacuole are indicators that help identify plant cells, such as seen in the onion peel.



13. **(a)** SER

Explanation: SER i.e. the smooth endoplasmic reticulum lacks ribosomes and functions in lipid manufacture and metabolism, the production of steroid hormones, and detoxification.

14. **(d)** (a), (c) and (d) are correct

Explanation: The molecular formula of a substance (an element or a compound) is a symbolic representation of the actual number of atoms present in one molecule of that substance. It represents the formula mass unit of the substance. It also conveys the name of the substance. Therefore, (a), (c) and (d) are correct.

15. **(c)** Statement B

Explanation: Brass is a homogeneous mixture of copper and zinc. Gun powder is not a powder. It is a simple mixture of potassium nitrate, sulfur, and charcoal. A solution is a homogeneous mixture of two or more substances. Air represents a solution in terms of science. Air is a mixture of gases as gases are liquified and then separated by fractional distillation. Statement A is false and Statement B is true.

16. **(a)** Iron

Explanation: As iron is a micronutrient that is required mainly for enzyme activity and fertilisers are supplied mainly for replenishing macronutrients which help in plant growth.

17. **(c)** A is true but R is false.

Explanation: A body has a uniform acceleration if it travels in a straight line and its velocity increases by equal amounts in equal intervals of time.

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

Explanation: The intermolecular force of attraction between the particles of gas is negligible and is free to move in any direction. Hence it fills completely the vessel in which it is kept.

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

Explanation: Blood is a fluid connective tissue. It consists of two components - fluid and corpuscles. It is composed of plasma, platelets, red blood cells, and white blood cells.

20. **(c)** A is true but R is false.

Explanation: Isotopes are species with same atomic number but different mass numbers.

Section B

21. Mass of substance m = 50 g

Volume of substance V = 20 cm^3

Therefore density of substance is

$D = \frac{M}{V} = \frac{50}{20}$ = 2.5 g cm^{-3}

The substance will sink in water, because its density is more than that of water.

OR

Because the person first moves a horizontal distance of 5 m. Hence for this part of motion the angle between the force and displacement is 90^o.

Hence, the work done is given by $W_1 = F\cos\theta = 10 \times \cos 90° = (10)\ (5)\ (0) = 0$

For the vertical motion, the angle between the force and the displacement is 0^o. Therefore the work done is given by

$W_1 = Fd\cos 0° = (10)\ (10)\ (\cos 0^o) = (10)\ (10)\ (1) = 100$ Nm = 100 J

Hence, total work done = $W_1 + W_2 = 0 + 100 = 100$ J

22. Evaporation is the process by which water (liquid) changes to vapours (gaseous form) at any temperature below its boiling point.
    Factors on which evaporation depends:-
    (a) Surface area
    (b) Humidity
    (c) Wind speed
    (d) Temperature
23. The frequency of the vibrating pendulum does not lie within the audible range (20 Hz to 20,000 Hz) and hence it does not produce audible sound.
24. When boiling water changes into steam it absorbs a certain amount of heat energy called latent heat.
    This shows that the latent heat of vaporization of steam is more than that of boiling water.
25. Initially, the carpet and dust-particles are at rest. When the carpet is beaten, it is suddenly set into motion. The dust particles tend to remain at rest due to the inertia of rest, therefore, dust comes out of it.

OR

Let the object be A and B moving from the opposite direction in the same straight line.

Momentum of A = m × V

= 1.5 × 2.5

= 3.75 kg ms^{-1}

Also, Momentum of B

= m × -V

= 1.5 × (-2.5)

= -3.75 kg ms^{-1}

If, V is the velocity of the objects after collision, then:

Combined momentum after collision = 3 × V

Using the law of conservation of momentum

Combined momentum of A and B = Momentum of A + Momentum of B

3 × V = 3.75 - 3.75

$\Rightarrow 3 \times V = 0$

$\Rightarrow$ V = 0

26. Isotopes of hydrogen are: Protium $_1H^1$ (1 proton, 0 neutron), Mass no. :1,

    Deuterium $_1H^2$ (1 proton, 1 neutron), Mass no.: 2

    Tritium $_1H^3$ (1 proton, 2 neutrons), Mass no.: 3

Section C

27. i. The difference between the longitudinal wave and the transverse wave is as follows:

Longitudinal wave	Transverse wave
It needs medium for propagation	It may or may not needs a medium for propagation.
Particles of the medium move in a direction parallel to the direction of the propagation of disturbance ex-sound wave	Particles of the medium move in the perpendicular direction of the propagation of disturbance. Ex-light wave

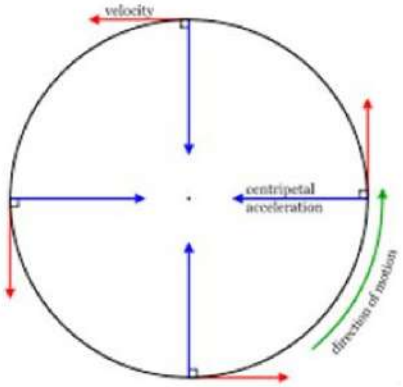
ii. The three characteristics of sound waves are

a. loudness
b. pitch
c. quality/timbre

iii. The peak is called the crest and valley is called the trough in the given diagram.

28. i. Valency = 0 [∵ number of valence electrons = 8]
    ii. Valency = 5 [∵ number of valence electrons = 3]
    iii. Valency = 2 [∵ number of valence electrons = 6]

29. When a body moves in a circle, it is called circular motion. When the velocity of an object changes, we say that the object is accelerating. The change in the velocity could be due to change in its magnitude or the direction of the motion or both.



If the athlete is running along a hexagonal shaped path ABCDEF, the athlete will have to change his direction six times while he completes one round. If the athlete moves with a velocity of constant magnitude along the circular path, the only change in his velocity is due to the change in the direction of motion.

The motion of the athlete moving along a circular path is an example of an accelerated motion.

The circumference of a circle of radius r is given by 2πr. If the athlete takes t seconds to go once around the circular path of radius r, the velocity v is given by

v = $\frac{2\pi r}{t}$

When an object moves in a circular path with uniform speed, its motion is called uniform circular motion.

OR

a. (a) Acceleration =slope of the velocity time graph

a = $\frac{V_2 - V_1}{t_2 - t_1}$

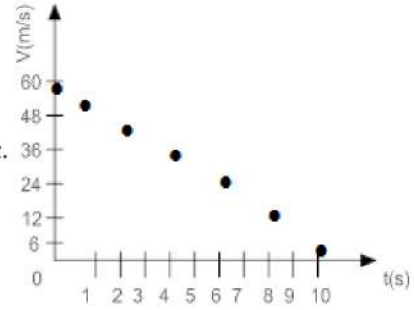
$a = \frac{54-24}{1-6} = \frac{30}{-5} = -6m/s^2$

b. Distance = $S = ut + \frac{1}{2}at^2$

$= 60 \times 10 + \frac{1}{2}(-6) \times (10)^2$

= 600-300 = 300m

c.



30. i. a. Kinetic energy of belt or the package.
    b. Heat energy
    c. Sound energy

ii. m = 36 kg, h = 2.4 m, g = 10 m/s^2

G.P.E.= $m \times g \times h$

$= 36 \times 10 \times 2.4$

= 864J

iii. $power = \frac{W}{t}$

$power = \frac{864}{4.4}$

= 196.36 W

iv. Mass is increased and power is constant, so increase in potential energy of mass is greater. Also, as mass is increased, speed is reduced and hence time taken by the conveyor is longer.

31. i. Road accidents occurring due to high speeds are much worse than accidents due to low speeds of vehicles. This is because the momentum of high-speed vehicles is more than that of the low speeds of vehicles.

ii. When a motorcar makes a sharp turn left or right at a high-speed. The lower portion of their passenger turns suddenly along with the motorcar but your upper portion does not change its direction due to inertia.

So, this portion of a passenger moves forward and the passenger tends to get thrown to one side or another side.

32.

Active transport	Passive transport
1. It involves movement of molecules against the concentration gradient. 2. It requires energy in the form of ATP molecules. 3. It is a rapid movement. 4. Movement of large molecules occur by active transport.	1. It involves movement of molecules along the concentration gradient. 2. No energy is required 3. It is a slow movement. 4. Small molecules or water molecules only are transported passively.

OR

S.No	Cell Wall	Cell Membrane
1	Cell wall is found in plant cell	Cell membrane is found in animal cells
2	Cell wall is completely permeable	Cell membrane is semi-permeable.
3	The function of the cell membrane is the same as that of the skin.	The function of the cell wall is to provide strength and rigidity to the cell.
4	It is non – living	It is living
5	It is made up of cellulose	It is made up of lipids and proteins

33. i. A represents companion cells, B represents sieve tubes, and C represents phloem parenchyma. which are small thin-walled cell containing dense and very active cytoplasm and large elongated nucleus.

ii. The sieve tubes end walls are perforated by numerous pores and are called sieve plates.

iii. The phloem parenchymatous cell performs the following functions:

a. Storage of food.

b. Slow lateral conduction of food.

Section D

34. We have given that,

Time taken , t = $\frac{1}{2}$ second

Initial velocity, u = 0 ms^{-1}

Acceleration due to gravity, g = 10 ms^{-2}

Acceleration of the car, a = + 10 ms^{-2} (downward)

i. speed v = at

v = 10 ms^{-2} × 0.5 s

= 5 ms^{-1}

Thus,

Its speed on striking the ground = 5 ms^{-1}

ii. Average spped = $\frac{u+v}{2}$

= $\frac{(0ms^{-1}+5ms^{-1})}{2}$

= 2.5 ms^{-1}

Thus,

Its average speed during the 0.5 s = 2.5 ms^{-1}

iii. Distance travelled, s = $\frac{1}{2}at^2$

= $\frac{1}{2} \times 10ms^{-2} \times (0.5s)^2$

= $\frac{1}{2} \times 10ms^{-2} \times 0.25s^2$

= 1.25m

Thus,

Height of the ledge from the ground = 1.25 m

OR

i. Formula to find the magnitude of gravitational force:

$F = \frac{GMm}{R^2}$.

where, M = mass of the earth

m = mass of the object

R = distance between centres of the earth and an object.

and universal gravitational constant, $G = 6.67 \times 10^{-11}$ N-m^2/kg^2

ii. a. Let gravitational force be F when the distance between them is R,

$F = \frac{GMm}{R^2}$ ....(i)

Now, when the distance reduces to half,

$F' = \frac{GMm}{\left(\frac{R}{2}\right)^2} = \frac{4GMm}{R^2} = 4F$

i.e. the force of gravitation becomes 4 times the original value.

b. When the mass becomes 4 times,

$F' = \frac{GM(4m)}{R^2} = 4F$

i.e. the force of gravitation becomes 4 times the original value.

35. Plastids are responsible. These are found in plant cells only. Plastids are the major cell organelles in plants. On the basis of pigments present in plastids, they are divided into two types;

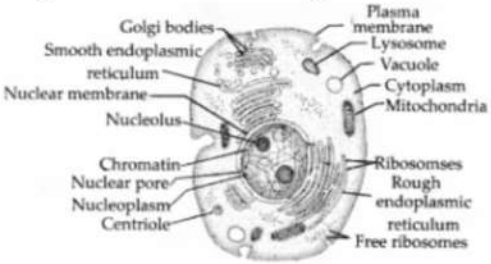
i. the colourless leucoplasts and

ii. the pigmented chromoplasts.

The colourless leucoplasts store starch, oil and protein granules whereas the pigmented chromoplasts have different colours and can be of several types. The most important ones are those containing the pigment chlorophyll, known as chloroplasts, which is responsible for the preparation of food by photosynthesis. Other chromoplasts contain non-green pigments, which are responsible for the characteristic colours of fruits and flowers.

OR

Diagram of an animal cell is given below:



36. i. Alloys are a homogeneous mixture of metals or non-metals because

a. It shows the properties of its constituents, and

b. It has variable composition, e.g. brass is considered a mixture because it shows the properties of its constituents, copper and zinc; and it has a variable composition.

ii. No, a solution is not generally a liquid always. For e.g. alloys are known to be solid solutions.

iii. The term solution is generally used for 'true solution'. In this case, the solution is always homogeneous.

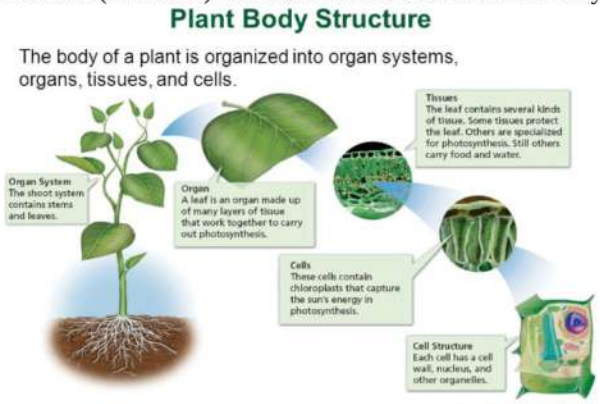
In the case of 'colloidal solution', that is not a true solution i.e. the solution is heterogeneous.

Section E

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

Plants are stationary or fixed they don't move. Since they have to be upright, they have a large quantity of supportive tissue. The supportive tissue generally has dead cells. Animals, on the other hand, move around in search of food, mates and shelter. Another difference between animals and plants is in the pattern of growth. The growth of plants occurs only in certain specific regions. New cells produced by meristem are initially like those of meristem itself, but as they grow and mature, their characteristics slowly change and they become differentiated as components of other tissues. The girth of the stem or root increases due to lateral

meristem (cambium). Cells of meristematic tissue are very active, lack vacuoles.



(i) Yes, meristematic tissue is composed of a single type of cell.

(ii) Intercalary.

OR

Apical meristematic.

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

Poultry is the fastest growing segment of animal husbandry in India despite the fact that the majority of Indians are vegetarians. Poultry yields eggs from layers that are female birds. It yields meat from two sources, young birds or broilers, and non-productive layers. The indigenous breeds include Busra, Chhattisgarh, Kadaknath, and Aseel. They are slow growing. The yield of eggs is small. The exotic breeds are White Leghorn, Rhode Island Red, Plymouth Rock, and Australorp. The exotic breeds are fast growing and yield a large number of eggs (180-280 per year). Many of the exotic breeds have been acclimatised in our country. A number of high-yielding hybrids have been developed, e.g., ILS-82, B-77, HH-260.

(i) Broilers is Young male birds.

(ii) When they are 7-8 weeks old with a weight of 1.0-1.5 kg.

(iii)Aseel Indian poultry bird is used in cock fighting.

OR

Plymouch Rock poultry bird yields the maximum number of eggs per annum.

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

Sodium chloride, commonly known as salt, is an ionic compound with the chemical formula NaCl, representing a 1:1 ratio of sodium and chloride ions. With molar masses of 22.99 and 35.45 g/mol respectively, 100 g of NaCl contains 39.34 g Na and 60.66 g Cl. Ravi prepared a solution of sodium chloride by mixing 5.85 g of salt in 1 litre of water.

(i) Molar mass of sodium chloride (NaCl) = Atomic mass of sodium (Na) + Atomic mass of chlorine (Cl)
= 23 + 35.5 u = 58.5 g/mol

(ii) Number of moles = $\frac{Given\ mass}{Gram\ molecular\ mass} = \frac{5.85}{58.5}$ = 0.1 mol

(iii) Concentration of solution = $\frac{Number\ of\ mass\ of\ solute}{Volume\ of\ solution} = \frac{0.1}{1}$ = 0.1mol/L

OR

molecular mass of NaCl = mass of Na atom + mass of Cl atom

= 23 + 35.5

= 58.5 g

5.85 g of NaCl = mass of sodium chloride/ molecular mass of NaCl = $\frac{5.85}{58.5}$ = 0.1 moles

or 0.1 moles of NaCl particle.

Each NaCl particle is equivalent to 2 ions, i.e., one Na^+ and one Cl^-

Total moles of ions = 0.1×2= 0.2 moles

Number of ions = $0.2 \times 6.022 \times 10^{23}$

= 1.2042×10^{23} ions.