# OSDAV Public School, Kaithal

**Half yearly Exams (2024-25)**
**Class: IX**
**Subject: Science**

SET -A

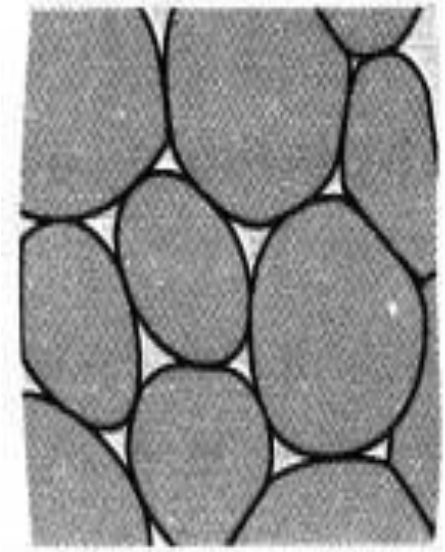
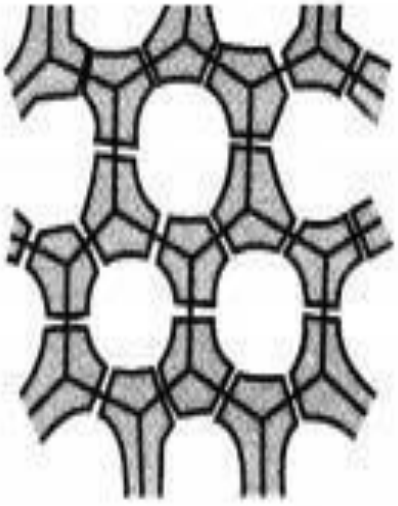
**Time: 3 Hrs .** **M.M. : 80**

**General Instructions:-**

**I. All questions are compulsory.**

| Q.N. | Questions | Marks |
|---|---|---|
| | **Section - A** | |
| 1 | The process of changing a liquid into a gas is called<br>a) Condensation b) Vaporation c) Sublimation d) Fusion | 1 |
| 2 | Which of the following is not the property of gases?<br>a) Gases have no definite volume. b) Gases have fixed shape.<br>c)Rate of diffusion of gases is high<br>d) Gaseous particles are continuously moving. | 1 |
| 3 | What does the slope of distance time graph represents<br>a) Speed b) Distance c) Time d) Acceleration | 1 |
| 4 | If a car is traveling at 30 m/s and comes to a stop in 10 seconds, what is its acceleration?<br>a) 3 $m/s^2$. b) -5 $m/s^2$. c) -10 $m/s^2$. d) -3 $m/s^2$ | 1 |
| 5 | Which of the following is not a unit of speed?<br>a) m/s b) km/h c) $m/s^2$ d) m/min | 1 |
| 6 | The quantity we get by the product of mass and velocity is<br>a) Inertia b) Momentum c) Newton d) Force | 1 |
| 7 | Action and reaction forces:<br>a) act on different bodies. b) act on same bodies<br>c) act in same direction d) both b and c | 1 |
| 8 | A coin placed on a card (rested at the edges of a glass) remains at rest because of<br>a) two forces acts on the coin which balance each other.<br>b) no unbalanced force acts on it<br>c) Inertia of rest.<br>d) Both a and b | 1 |
| 9 | The value of acceleration due to gravity<br>a) is same on poles and equator. b) is least at poles<br>c) is least at equator. d) increases from pole to equator | 1 |
| 10 | The gravitational force between two objects is F. If masses of both objects are doubled without changing the distance between them, then gravitational force would be<br>a) F/4 b) 4F c) F/2 d) 2F | 1 |
| 11 | The weight of the body on moon is 35N. What is the weight on the earth.<br>a) 240N b) 210N c) 200N d) 355N | 1 |
| | For question no. 12,13,31,32 two statements are given as Assertion(A)and Reason(R). Find the correct option from the following:<br>a) Both A and R are true and R is the correct explanation of A<br>b) Both A and R are true and R is not the correct explanation of A.<br>c) Assertion is true but reason is false<br>d) Assertion is false but reason is true | |
| 12 | Assertion (A): A solution of table salt in a glass of water is homogeneous.<br>Reason(R) : A solution having different composition throughout is homogeneous. | 1 |
| 13 | Assertion (A): Weight of a body on earth is equal to the force with which the body is attracted towards the earth.<br>Reason(R): Weight of a body is independent of the mass of the body. | 1 |

| | | |
|---|---|---|
| | **Section - B** | |
| 14 | Give reason:<br>a) fruits fall off the branches in strong wind.<br>b) Dust flies off when carpet is hit with stick. | 2 |
| 15 | Give two points of difference between mass and weight. | 2 |
| 16 | Neha makes a saturated solution of potassium chloride in water at 353 Kelvin and leaves the solution to cool at room temperature. What would she observe as the solution cools? Explain. | 2 |
| 17 | A person is running along a circular path in a park.<br>a) At what point he changes his direction while running?<br>b) If he covered half of the circular path, what will be his displacement? | 2 |
| 18 | What would happen if a fielder stops the fast-moving ball suddenly? Justify your answer. | 2 |
| | **Section - C** | |
| 19 | a) What is Tyndall effect?<br>b) Copper sulphate solution in water does not show Tyndall effect but mixture of water and milk shows. Why? | 3 |
| 20 | a) Define evaporation<br>b) How does the following affects the rate of evaporation and why?<br>i) surface area ii) humidity | 3 |
| 21 | State Archimedes principle. Give it's two applications. | 3 |
| | **Section - D** | |
| 22 | a) Compare stone, oil and air in the basis of the following:<br>i) Compressibility ii) Particle motion.<br>b) Why gases exerts pressure on the walls of container? | 5 |
| 23 | a) Draw the velocity - time graph of an object moving with uniform acceleration.<br>b) A truck running at 90 km/h is brought to rest over a distance of 25 m. Calculate the acceleration and time for which breaks are applied? | 5 |
| | **Section - E** | |
| 24 | Case study: The force acting on a body is capable of bringing changes in its motion. Newton's three laws of motion are a consequence of this effect of force. While Newton's first law of motion is called the law of inertia, second law is called the real law of motion but it is the third law of motion which enables our movement on earth. During our movement the total momentum of any system of which we are a part , remains constant, as obtained from third law of motion.<br>a) How would you arrive at a mathematical formula to measure force using second law of motion.<br>b)State Newton's 3rd law of motion.<br>c)Calculate the force required to produce an acceleration of 2.5 $m/s^2$ in a body of 4 kg. | 4 |
| 25 | A pure substance consist of single type of particles. Mixtures consist of more than one kind of pure form of matter. Soil and soft drinks are mixtures where as water and carbon dioxide are pure substances. Solution is a homogeneous mixture.<br>a) Give two reasons to support that water is a compound but not a mixture.<br>b) Identify the solute and the solvent present in tincture of iodine.<br>c) Compare solutions and suspensions on the basis of their stability. | 4 |
| | **Biology** | |
| **26** | Which of the following tissues connects bone to muscles?<br>A) Ligaments. B) tendons C) bone D) cartilages | 1 |
| **27** | Which cell organelle contains digestive enzymes and helps in the digestion of cellular waste?<br>A) Golgi apparatus. B) Endoplasmic reticulum. C) Mitochondria. D) Lysosomes | 1 |

| | | |
|---|---|---|
| **28** | What is the function of the cell wall in plant cells?<br>A) Regulation of cell functions. B) Storage of genetic material<br>C) Protection and structural support. D) Energy production | 1 |
| **29** | The midrib and veinlets of leaf consist of<br>A) Collenchyma B) sclerenchyma C) parenchyma D) epidermis | 1 |
| **30** | Which organelle is involved in the breakdown of glucose to produce energy in the form of ATP?<br>A) Nucleus. B) Lysosomes. C) Mitochondria. D) Endoplasmic reticulum | 1 |
| **31** | Assertion(A) : A cell swells up when present in a hypotonic solution.<br>Reason(R) : More water molecules enter the cell than they leave. | 1 |
| **32** | Assertion(A): The inner lining of the intestine has tall epithelial cells.<br>Reason(R) : Columnar epithelium facilitates absorption and secretion. | 1 |
| **33** | How do fungi and bacteria can withstand much greater changes in the surrounding medium than animal cells? | 2 |
| **34** | How RER different from SER on the basis of a) surface b) function | 2 |
| **35** | Give reason<br>A) Meristematic cells have a prominent nucleus and dense cytoplasm but they lack vacuoles.<br>B) Branches of a tree move and bend freely in high wind velocity. | 2 |
| **36** | A) Write two functions of areolar tissue.<br>B) Name two tissues responsible for locomotion in our body. | 2 |
| **37** | Differentiate between different types of muscle fibers on the basis of characteristics of of cell, location and function. | 3 |
| **38** | Draw animal cell and label<br>(i) power house of cell ( ii ) suicidal bags<br>(iii) control center (iv) packaging and dispatching unit of cell. | 3 |
| **39** | **( i)**<br>  <br>Slide A<br>  <br>Slide B<br>a) Identify A and B b) Write their location c) Write their functions<br>(ii) Differentiate Apical & lateral meristem according to their position and function. | 5 |

| | | |
|---|---|---|
| **40** | Case study:<br>Some substances like carbon dioxide or oxygen can move across the cell membrane by a process called diffusion. There is spontaneous movement of a substance from a region of high concentration to a region where its concentration is low. Similar thing happens in cells – some substance like CO2 (carbon dioxide is cellular waste and requires it to be excreted out by the cell) accumulates in high concentrations inside the cell. In the cell's external environment, the concentration of CO2 is low as compared to that inside the cell. As soon as there is a difference of concentration of CO2 inside and outside a cell, CO2 moves out of the cell, from a region of high concentration, to a region of low concentration outside the cell by the process of diffusion.<br>a) Name the selectively permeable membrane. Why is it called so?<br>b) Write composition of selectively permeable membrane.<br>c) How selectively permeable membrane different from cell wall ( write two differences) | 4 |

# OSDAV Public School, Kaithal

**Half yearly Exams (2024-25)**

**Class : IX**

**Subject : Science**

Set - B

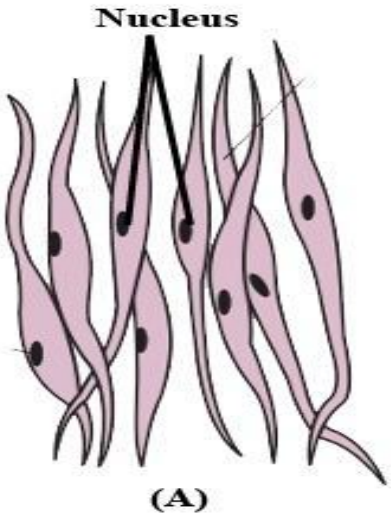
**Time: 3 Hrs .** **M.M. : 80**

**General Instructions:-**

**I. All questions are compulsory.**

| Q.N. | Questions | Marks |
|---|---|---|
| | **Section - A** | |
| 1 | The process of changing a gas into a liquid is called<br>a) Condensation b) Evaporation c) Sublimation d) Fusion | 1 |
| 2 | Which of the following is not the property of liquids?<br>a) liquids have definite volume. b) liquids have fixed shape.<br>c) liquids are fluid in nature. d) liquid particles are continuously moving. | 1 |
| 3 | What does the slope of velocity - time graph represents?<br>a) Speed b) Distance c) Time d) Acceleration | 1 |
| 4 | If a car is traveling at 50 m/s and comes to a stop in 10 seconds, what is its acceleration?<br>a) 3 $m/s^2$. b) -5 $m/s^2$. c) -10 $m/s^2$. d) -3 $m/s^2$ | 1 |
| 5 | Which of the following is not a unit of acceleration?<br>a) $m/s^2$ b) $km/h^2$ c) $km/s^2$ d) m/s | 1 |
| 6 | The quantity we get by the product of mass and acceleration is<br>a) Inertia b) Momentum c) Newton d) Force | 1 |
| 7 | Choose the correct option for Newton's third law of motion:<br>a) action and reaction forces act on different bodies.<br>b) action and reaction forces act on same bodies<br>c) action and reaction forces act in same direction<br>d)both b and c | 1 |
| 8 | In the game of carrom, only the lowest coin get displayed when it is hit strongly by a striker because of<br>a) two forces acts on the coin which balance each other.<br>b) no unbalanced force acts on it<br>c) Both a and b<br>d) Inertia of rest | 1 |
| 9 | The acceleration due to gravity on the earth depends upon<br>a) mass of the body b) mass of earth<br>c) shape and size of the body d) volume of the body | 1 |
| 10 | The gravitational force between two objects is F. If masses of both objects are tripled without changing the distance between them, then gravitational force would be<br>a)F/6 b)6F c)F/9 d)9F | 1 |
| 11 | The weight of the body on moon is 25N. What is the weight on the earth.<br>a) 150N b)160N c)1400N d)0N | 1 |
| | For question no. 12,13,31,32 two statements are given as Assertion(A)and Reason(R). Find the correct option from the following:<br>a) Both A and R are true and R is the correct explanation of A<br>b) Both A and R are true and R is not the correct explanation of A.<br>c) Assertion is true but reason is false<br>d) Assertion is false but reason is true | |
| 12 | Assertion (A): A true solution exhibits Tyndall effect<br>Reason(R) : Particles are very large in size. | 1 |

| | | |
|---|---|---|
| 13 | Assertion (A): An object floats if it displaces an amount of liquid whose weight is greater than weight of object.<br>Reason(R): During floatation, the object experience no net force in the downward direction. | 1 |
| | **Section - B** | |
| 14 | Give reason:<br>a) fruits fall off the branches in strong wind.<br>b) Dust flies off when carpet is hit with stick. | 2 |
| 15 | Give two points of difference between mass and weight. | 2 |
| 16 | Niti makes a saturated solution of calcium chloride in water at 453 Kelvin and leaves the solution to cool at room temperature. What would she observe as the solution cools? Explain. | 2 |
| 17 | A person is running along a circular path in a park.<br>a) At what point he changes his direction while running?<br>b) If he covered one complete circular path, what will be his displacement? | 2 |
| 18 | What would happen if an athlete is made to jump on floor rather than cushion bed? Justify your answer. | 2 |
| | **Section - C** | |
| 19 | a) What is Tyndall effect?<br>b) Copper sulphate solution in water does not show Tyndall effect but mixture of water and milk shows. Why? | 3 |
| 20 | a) Define evaporation<br>b) How does the following affects the rate of evaporation and why<br>i) Temperature ii) Surface area | 3 |
| 21 | State Archimedes principle. Give it's two applications. | 3 |
| | **Section - D** | |
| 22 | a) Compare stone, oil and air in the basis of the following:<br>i ) interparticle distance ii) Rigidity<br>b) Why gases exerts pressure on the walls of container? | 5 |
| 23 | a) Draw the distance - time graph of an object moving with uniform motion.<br>b) A truck running at 108 km/h is brought to rest over a distance of 20 m. Calculate the acceleration and time for which breaks are applied? | 5 |
| | **Section - E** | |
| 24 | Case study: The force acting on a body is capable of bringing changes in its motion. Newton's three laws of motion are a consequence of this effect of force. While Newton's first law of motion is called the law of inertia, second law is called the real law of motion but it is the third law of motion which enables our movement on earth. During our movement the total momentum of any system of which we are a part , remains constant, as obtained from third law of motion.<br>a) How would you arrive at a mathematical formula to measure force using second law of motion.<br>b)State Newton's 3rd law of motion.<br>c)Calculate the force required to produce an acceleration of 3.5 $m/s^2$ in a body of 6 kg. | 4 |
| 25 | A pure substance consist of single type of particles. Mixtures consist of more than one kind of pure form of matter. Soil and soft drinks are mixtures where as water and carbon dioxide are pure substances. Solution is a homogeneous mixture.<br>a) Give two reasons to support that water is a compound but not a mixture.<br>b) Identify the solute and the solvent present in Sugar solution .<br>c) Compare solutions and suspensions on the basis of their stability. | 4 |

| | Biology | |
|---|---|---|
| **26** | Which of the following tissues connects bone to bones?<br>a) Ligament b) tendons c) bone d) cartilages | **1** |
| **27** | Which cell organelle is responsible for membrane biogenesis ?<br>a) Golgi apparatus. b) Endoplasmic reticulum. c) Mitochondria. d) Lysosomes | **1** |
| **28** | What is the function of the Mitochondria in cells?<br>a) Regulation of cell functions. b) Storage of genetic material<br>c) Protection and structural support. d) Energy production | **1** |
| **29** | The leaf stalk consist of<br>a) Collenchyma b) sclerenchyma. c) parenchyma. d) epidermis | **1** |
| **30** | Which organelle is involved in cellular reproduction ?<br>a) Nucleus. b) Lysosomes. c) Mitochondria. d) Endoplasmic reticulum | **1** |
| **31** | Assertion(A) : A cell shrinks up when present in a hypertonic solution.<br>Reason(R) : More water molecules leave the cell than they enter. | **1** |
| **32** | Assertion(A) : The inner lining of kidney tubules has cuboidal epithelium cells.<br>Reason(R) : Columnar epithelium facilitates absorption and secretion. | **1** |
| **33** | How do plant cells can withstand much greater changes in the surrounding medium than animal cells? | **2** |
| **34** | How prokaryotic cell different from Eukaryotic cells on the basis of<br>a) Cell organelle b) nucleus | **2** |
| **35** | Give reason<br>a) Blood is called connective tissue.<br>b) voluntary muscle fibre are called skeletal muscle fibres. | **2** |
| **36** | a) Draw well labelled structure of neuron.<br>b) Write function of conductive tissues of plants. | **2** |
| **37** | Differentiate between different type of simple permanent plant tissue on the basis of composition of of cell wall , location and function. | **3** |
| **38** | Draw plant cell and label<br>a) Power house of cell c) control center<br>b) Kitchen of plant cell d) living fluid | **3** |
| **39** | **( I )**<br>  <br><br>**(A)**<br>  <br><br>**(B)**<br>a) Identify A and B . c) Write their function.<br>b) Write their location d ) No. of Nucleus<br>**(II) Name fat storing tissue in human body.** | **5** |

| | | |
|---|---|---|
| **40** | Case study: Some substances like carbon dioxide or oxygen can move across the cell membrane by a process called diffusion. There is spontaneous movement of a substance from a region of high concentration to a region where its concentration is low. Similar thing happens in cells – some substance like CO2 (carbon dioxide is cellular waste and requires it to be excreted out by the cell) accumulates in high concentrations inside the cell. In the cell's external environment, the concentration of CO2 is low as compared to that inside the cell. As soon as there is a difference of concentration of CO2 inside and outside a cell, CO2 moves out of the cell, from a region of high concentration, to a region of low concentration outside the cell by the process of diffusion.<br>a) Name the selectively permeable membrane. Why is it called so?<br>b) Write composition of selectively permeable membrane.<br>c) How selectively permeable membrane different from cell wall<br>(write two differences) | **4** |

# OSDAV Public School, Kaithal

**Half yearly Exams (2024-25)** **Set - A**

**Class : IX**

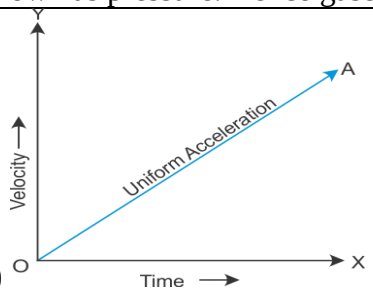
**Subject : Science**

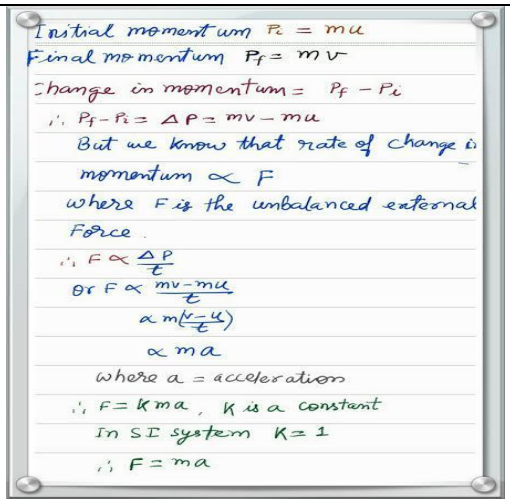
**Time: 3 Hrs .** **M.M. : 80**

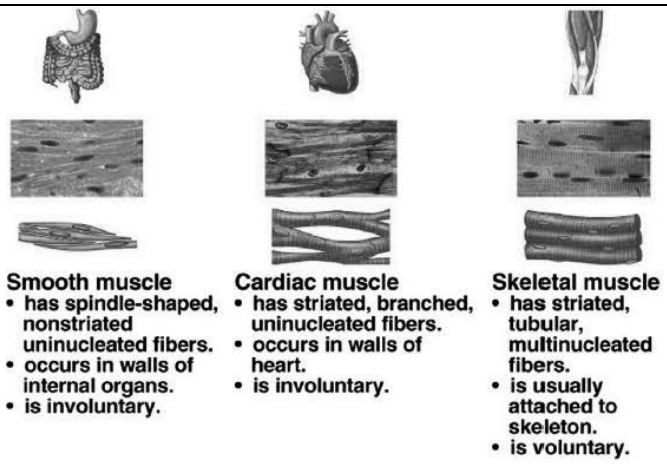
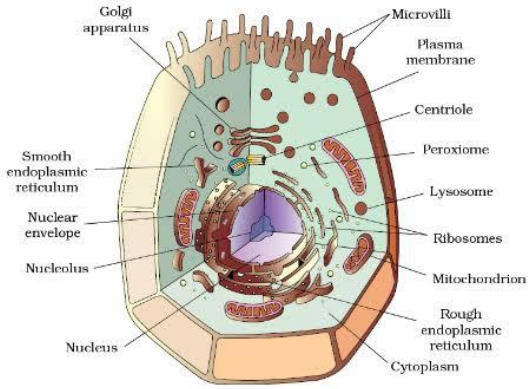
**General Instructions:-**

**I. All questions are compulsory.**

| Q.N. | Questions | Marks |
|---|---|---|
| | **Section - A** | |
| 1 | b | 1 |
| 2 | b | 1 |
| 3 | a | 1 |
| 4 | d | 1 |
| 5 | c | 1 |
| 6 | b | 1 |
| 7 | a | 1 |
| 8 | c | 1 |
| 9 | c | 1 |
| 10 | b | 1 |
| 11 | b | 1 |
| 12 | c | 1 |
| 13 | c | 1 |
| | **Section - B** | |
| 14 | a) In strong wind branches comes in motion but fruits wants to stay at rest due to inertia of rest. Hence they falls down.<br>b) When carpet is beaten with the stick, carpet comes in motion but dust particles wants to stay at rest due to inertia of rest. Hence dust flies off. | 2 |
| 15 | <table><tr><th></th><th>Mass</th><th>Weight</th></tr><tr><td>i.</td><td>Mass is the quantity of matter contained in an object.</td><td>Weight is the force with which the earth attracts an object.</td></tr><tr><td>ii.</td><td>Mass remains same everywhere.</td><td>Weight of a body keeps on changing from place to place.</td></tr><tr><td>iii.</td><td>Mass is measured in kilogram (kg).</td><td>Weight is measured in newton (N).</td></tr><tr><td>iv.</td><td>Mass is a scalar quantity.</td><td>Weight is a vector quantity.</td></tr><tr><td>v.</td><td>Mass of an object can never be zero.</td><td>Weight of an object becomes zero at the centre of the earth.</td></tr></table> | 2 |
| 16 | Extra amount of potassium chloride will get settle down as solubility decreases with decrease in temperature. | 2 |
| 17 | a)At every point.<br>b) Twice of radius. | 2 |
| 18 | Time decrease, rate of change of momentum increases and hence force increases. | 2 |
| | **Section - C** | |
| 19 | a) the phenomena of scattering of light by the colloidal particles is called Tyndall effect.<br>b) Because particles of copper sulphate are very small in size so they can't show scattering of light but milk particles are of colloidal sized and hence milk particles scatter the beam of light. | 3 |
| 20 | a) The conversion of liquid state into vapour state at any temperature below its boiling point is called evaporation. | 3 |

| | | |
|---|---|---|
| | b)(i) surface area - More the surface area more will be the rate of evaporation as the large number of particles comes in direct contact with the atmosphere.<br>ii)humidity - More the humidity, lesser will be the rate of evaporation as the atmosphere can hold only a limited amount of water vapours. | |
| 21 | Whenever an object is immersed fully or partially in a fluid , it experiences an upward force which is equal to the weight of fluid displaced by the object.<br>Application:1. It is used in lactometer to check the purity of sample of milk.<br>2. It is used in hydrometer to check the density of the liquids. | 3 |
| | **Section - D** | |
| 22 | i)Compressibility : Stone - Negligible compressible<br>Oil - Negligible compressible<br>Air - Highly compressible<br>ii)Particle motion : Stone - Do not show<br>liquids - Show particle motion<br>Gas - move very fastly.<br>b) Particles of gas are continuously moving. So they hit each other and also with the walls of container and exert force on the walls of container. This force per unit area is known as pressure. Hence gases exerts pressure on the walls of container. | 5 |
| 23 |  <br>a)<br>b)<br>initial velocity (u) = 90Km/h = 25m/s<br>Final velocity (v) = 0m/s<br>Distance (s) = 25m<br>$v^2 - u^2 = 2as$<br>$(0)^2 - (25)^2 = 2a25$<br>$a = -12.5m/s^2$<br><br>$v = u + at$<br>$0 = 25 + (-12.5)t$<br>$t = 2s$ | 5 |
| | **Section - E** | |
| 24 | a) consider an object of mass m moving with initial velocity u. let force F is applied on the object and it get accelerated by acceleration a in time t and its final velocity becomes v. | 4 |

| | | |
|---|---|---|
| |  <br>Initial momentum $P_i = mu$<br>Final momentum $P_f = mv$<br>Change in momentum = $P_f - P_i$<br>$\therefore P_f - P_i = \Delta P = mv - mu$<br>But we know that rate of change i<br>momentum $\propto F$<br>where F is the unbalanced external<br>Force.<br>$\therefore F \propto \frac{\Delta P}{t}$<br>or $F \propto \frac{mv-mu}{t}$<br>$\propto m(\frac{v-u}{t})$<br>$\propto ma$<br>where a = acceleration<br>$\therefore F = kma$, k is a constant<br>In SI system $k = 1$<br>$\therefore F = ma$<br><br>b) To every action there is an equal and opposite reaction.<br>c) F = ma<br>F = 4(2.5)<br>=10N | |
| 25 | a) 1.In water hydrogen and oxygen are chemically combined with each other.<br>2. Elements of water cannot be separated by physical method but they can be separated only by chemical method.<br>b)solute - Iodine<br>Solvent - Alcohol<br>c) Solutions are stable but suspensions are not stable. | 4 |
| | **Biology** | |
| **26** | C. Tendons | 1 |
| **27** | D) Lysosomes | 1 |
| | C) Protection and structural support. | 1 |
| **29** | B) sclerenchyma | 1 |
| **30** | C) Mitochondria. | 1 |
| **31** | A | 1 |
| **32** | A. | 1 |
| **33** | Because of cell wall and The cell wall then exerts an equal pressure against the swollen cell, allowing it to withstand greater changes in its environment. | 2 |
| **34** | a) surface<br>RER - rough SER smooth<br>b) function<br>RER - help in formation of proteins<br>SER- help in formation of lipids | 2 |
| **35** | A) meristematic tissues are dividing tissues, so they don't need to store anything<br>B) Because of the presence of collenchyma | 2 |
| **36** | A) 1. Helps to repairing the other tissue.2. Provide surface to other tissues.3. Fill the gap<br>B) Nervous tissue and muscle fibres | 2 |

| | | |
|---|---|---|
| **37** |  <br>**Smooth muscle**<br>• has spindle-shaped, nonstriated uninucleated fibers.<br>• occurs in walls of internal organs.<br>• is involuntary.<br>**Cardiac muscle**<br>• has striated, branched, uninucleated fibers.<br>• occurs in walls of heart.<br>• is involuntary.<br>**Skeletal muscle**<br>• has striated, tubular, multinucleated fibers.<br>• is usually attached to skeleton.<br>• is voluntary. | 3 |
| |  <br>(i) power house of cell - mitochondria, (iii) control center- nucleus<br>(ii) suicidal bags - lysosomes (iv) packaging and dispatching unit of cell. Golgi bodies. | 3 |
| **39** | A- parenchyma B- sclerenchyma<br>b)Write their location parenchyma- plant stem , pith sclerenchyma- bark of tree<br>c)Write their functions parenchyma- storage of food sclerenchyma- provide mechanical strength | 5 |
| **40** | a. Plasma membrane because it does not allow all the things to pass through it<br>b. Proteins and lipids<br>c. | 4 |

| Cell Membrane | Cell Wall |
|---|---|
| 1.) Present in all Cells. | Present only in plants, bacteria, fungi and algae |
| 2.) It is semi-permeable. | It is fully permeable. |
| 3.) Main function is to protect protoplasm. | Main function is to protect cell membrane and maintains shape of the cell. |
| 4.) It is alive and it is active metabolically. | Non-living and inactive. |
| 5.) Made up of lipids, protein and carbohydrates. | Made up of peptidoglycan (in bacteria), chitin (in fungi) and cellulose in plants. |

# OSDAV Public School, Kaithal

**Half yearly Exams (2024-25)**

**SET - B** **Class : IX**

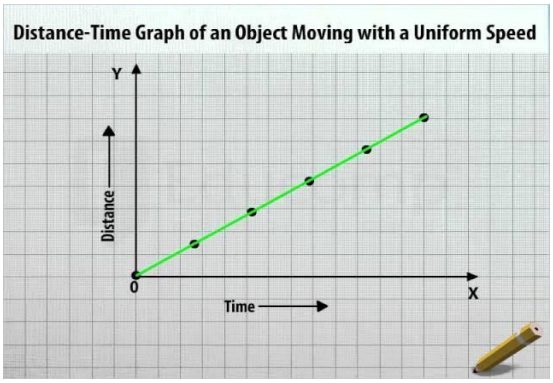
**Subject : Science**

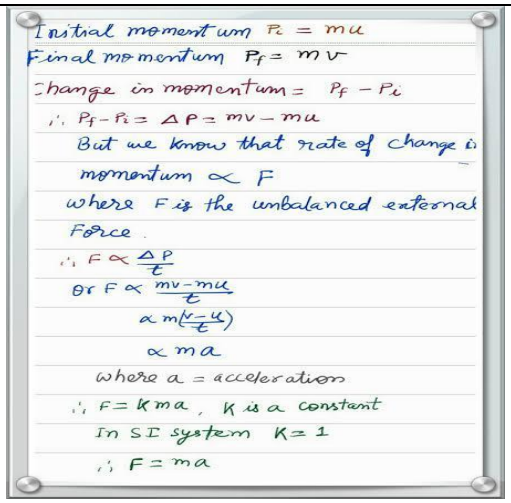
**Time: 3 Hrs .** **M.M. : 80**

**General Instructions:-**

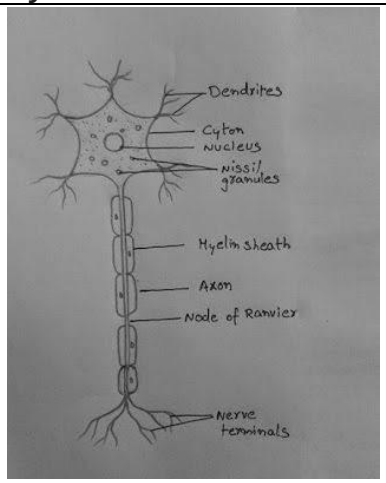
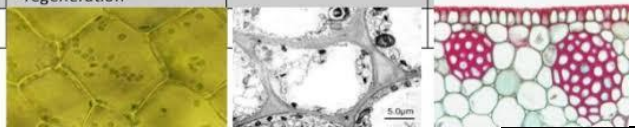
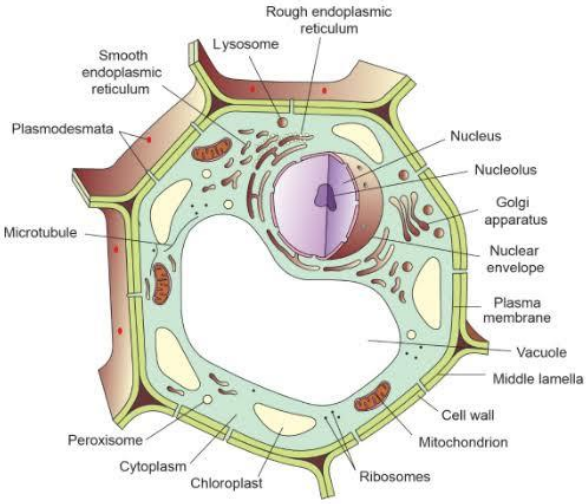
**I. All questions are compulsory.**

| Q.N. | Questions | Marks |
|---|---|---|
| | **Section - A** | |
| 1 | a | 1 |
| 2 | b | 1 |
| 3 | d | 1 |
| 4 | b | 1 |
| 5 | d | 1 |
| 6 | d | 1 |
| 7 | a | 1 |
| 8 | d | 1 |
| 9 | b | 1 |
| 10 | d | 1 |
| 11 | a | 1 |
| 12 | d | 1 |
| 13 | a | 1 |
| | **Section - B** | |
| 14 | a) In strong wind branches comes in motion but fruits wants to stay at rest due to inertia of rest. Hence they falls down.<br>b) When carpet is beaten with the stick, carpet comes in motion but dust particles wants to stay at rest due to inertia of rest. Hence dust flies off. | 2 |
| 15 | <table><tr><th></th><th>Mass</th><th>Weight</th></tr><tr><td>i.</td><td>Mass is the quantity of matter contained in an object.</td><td>Weight is the force with which the earth attracts an object.</td></tr><tr><td>ii.</td><td>Mass remains same everywhere.</td><td>Weight of a body keeps on changing from place to place.</td></tr><tr><td>iii.</td><td>Mass is measured in kilogram (kg).</td><td>Weight is measured in newton (N).</td></tr><tr><td>iv.</td><td>Mass is a scalar quantity.</td><td>Weight is a vector quantity.</td></tr><tr><td>v.</td><td>Mass of an object can never be zero.</td><td>Weight of an object becomes zero at the centre of the earth.</td></tr></table> | 2 |
| 16 | Extra amount of calcium chloride will get settle down as solubility decreases with decrease in temperature. | 2 |
| 17 | a)At every point.<br>b) Zero | 2 |
| 18 | Time decrease, rate of change of momentum increases and hence force increases. Athlete will get hurt. | 2 |
| | **Section - C** | |
| 19 | a) The phenomena of scattering of light by the colloidal particles is called Tyndall effect.<br>b) Because particles of copper sulphate are very small in size so they can't show scattering of light but milk particles are of colloidal sized and hence milk particles scatter the beam of light. | 3 |

| | | |
|---|---|---|
| 20 | a) The conversion of liquid state into vapour state at any temperature below its boiling point is called evaporation.<br>b)(i) Temperature - High is the temperature, high will be rate of evaporation as kinetic energy of the particles increases with increase in temperature.<br>(ii) surface area - More the surface area more will be the rate of evaporation as the large number of particles comes in direct contact with the atmosphere. | 3 |
| 21 | Whenever an object is immersed fully or partially in a fluid , it experiences an upward force which is equal to the weight of fluid displaced by the object.<br>Application:1. It is used in lactometer to check the purity of sample of milk.<br>2. It is used in hydrometer to check the density of the liquids. | 3 |
| | **Section - D** | |
| 22 | a) Interparticle distance : Stone - Particles are tightly packed. Negligible interparticle distance<br>Oil - less interparticle distance<br>Air - large interparticle distance<br>ii) Rigidity : Stone - Rigid<br>liquids - not rigid<br>Gas - not rigid.<br>b) Particles of gas are continuously moving. So they hit each other and also with the walls of container and exert force on the walls of container. This force per unit area is known as pressure. Hence gases exerts pressure on the walls of container. | 5 |
| 23 |  <br>b) Initial velocity (u) = 108Km/h = 30m/s<br>Final velocity (v) = 0m/s<br>Distance (s) = 20m<br>$v^2 - u^2 = 2as$<br>$(0)^2 - (30)^2 = 2a20$<br>$a = -22.5m/s^2$<br><br>$v = u + at$<br>$0 = 30 + (-22.5)t$<br>$t = 1.33s$ | 5 |
| | **Section - E** | |
| 24 | a) consider an object of mass m moving with initial velocity u. let force F is applied on the object and it get accelerated by acceleration a in time t and its final velocity becomes v. | 4 |

<table>
<tr><td></td><td> 

<br><br>b) To every action there is an equal and opposite reaction.<br>c) F = ma<br>F = 6(3.5)<br>=21N</td><td></td></tr>
<tr><td>25</td><td>a) 1.In water hydrogen and oxygen are chemically combined with each other.<br>2. Elements of water cannot be separated by physical method but they can be separated only by chemical method.<br>b)solute - sugar<br>Solvent - Water<br>c) Solutions are stable but suspensions are not stable.</td><td>4</td></tr>
<tr><td></td><td>Biology</td><td></td></tr>
<tr><td>26</td><td>a) Ligament</td><td>1</td></tr>
<tr><td>27</td><td>b) Endoplasmic reticulum.</td><td>1</td></tr>
<tr><td>28</td><td>d) Energy production</td><td>1</td></tr>
<tr><td>29</td><td>a) Collenchyma</td><td>1</td></tr>
<tr><td>30</td><td>a) Nucleus.</td><td>1</td></tr>
<tr><td>31</td><td>A</td><td>1</td></tr>
<tr><td>32</td><td>B</td><td>1</td></tr>
<tr><td>33</td><td>Because of cell wall and The cell wall then exerts an equal pressure against the swollen cell, allowing it to withstand greater changes in its environment.</td><td>2</td></tr>
<tr><td>34</td><td><table>
<tr><th>PROKARYOTIC CELL</th><th>EUKARYOTIC CELL</th></tr>
<tr><td>Generally smaller in size than the eukaryotic cell (1-10µm)</td><td>Larger in size than the prokaryotic cell (5-100µm)</td></tr>
<tr><td>Membrane bound organelles are absent.</td><td>Membrane bound organelles are present.</td></tr>
<tr><td>The chromosome is singular.</td><td>More than one chromosomes are present.</td></tr>
<tr><td>The nuclear region is not very well defined and is called as the nucleoid.</td><td>The nuclear region is very well defined in form of separate membrane bound organelle called as the nucleus.</td></tr>
</table></td><td>2</td></tr>
<tr><td>35</td><td>a. Blood is considered a specialized connective tissue as it connects all systems of the body and transports oxygen, nutrients, and wastes.<br>b. Voluntary muscle fibres are connected to the skeletal</td><td>2</td></tr>
</table>

| | | |
|---|---|---|
| | system | |
| **36** |  <br>a)<br>b) xylem help in transportation of water and phloem help in transportation of food | **2** |
| **37** | **Ground Tissue**<br>PARENCHYMA: • spherical • thin-walled • living, metabolizing tissue<br>COLLENCHYMA: • elongated cells with unevenly thickened cell walls • alive at maturity<br>SCLERENCHYMA: • with primary and secondary cell walls • dead at functional maturity<br>Location: • throughout the plant / • beneath the epidermis in young stems and in leaf veins / • fibers in wood, bark, leaves, stems • sclereids in fruits and seeds<br>Functions: • photosynthesis and respiration • storage • regeneration / • flexible support system / • structural support<br>Appearance:  | **3** |
| **38** |  <br>a)Power house of cell Mitochondria c) control center nucleus<br>b)Kitchen of plant cell chloroplast d) living fluid cytoplasm | **3** |
| **39** | a)A) smooth muscle fibre B) voluntary muscle fibres<br>B a) iris of eye B) forelimbs<br>C a) involuntary actions B) voluntary actions<br>D a) uninterested B multinucleated | **5** |

| | | |
|---|---|---|
| **40** | a. Plasma membrane because it does not allow all the things to pass through it<br>b. Proteins and lipids<br>c. | **4** |

| Cell Membrane | Cell Wall |
|---|---|
| 1.) Present in all Cells. | Present only in plants, bacteria, fungi and algae |
| 2.) It is semi-permeable. | It is fully permeable. |
| 3.) Main function is to protect protoplasm. | Main function is to protect cell membrane and maintains shape of the cell. |
| 4.) It is alive and it is active metabolically. | Non-living and inactive. |
| 5.) Made up of lipids, protein and carbohydrates. | Made up of peptidoglycan (in bacteria), chitin (in fungi) and cellulose in plants. |