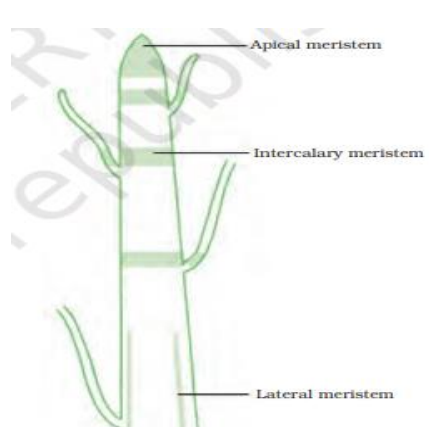


INDIAN SCHOOL AL WADI AL KABIR
DEPARTMENT OF SCIENCE
CLASS IX (2022-23)
MID TERM EXAMINATION
SET-1
ANSWER KEY

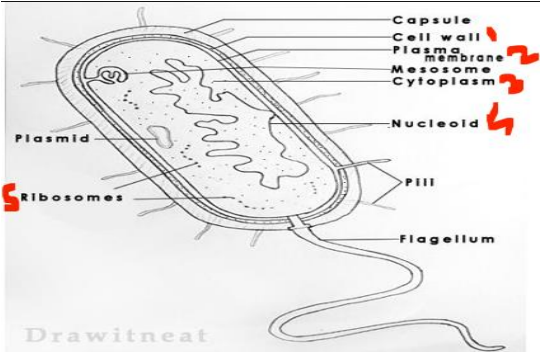
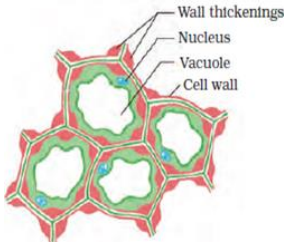
Sl.no	ANSWERS	Marks				
1	a) uniform motion	1				
2	(b) Car B is the slowest.	1				
3	(a) If the car is moving on a straight road	1				
4	(b) always act on different bodies in opposite directions	1				
5	(a) remains the same	1				
6	(d) decrease the rate of change of momentum	1				
7	(c)Oxygen, water, sugar	1				
8	Solids	1				
9	Colloidal solution is homogeneous	1				
10	(c)(i), (iii) and (iv)	1				
11	The product will always have a fixed composition.	1				
12	(a) the concentration of water molecules in the cell is higher than the concentration of water molecules in the surrounding medium.	1				
13	(d) (iv) and (ii)	1				
14	(c) Protein synthesis; cellular digestion	1				
15	(c) Chlorenchyma provide flexibility to plants	1				
16	(d) Sclerenchyma, A – lumen, B – lignified thick cell wall	1				
	CASE BASED STUDY QUESTIONS/SOURCE BASED					
17 (i)	(b) 30m/s	1				
17(ii)	How far does it travel in 1 second? (b) 30m	1				
17(iii)	How far does it travel in 6 seconds? (c) 180 m	1				
17(iv)	<table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; width: 50%;">Average speed</th> <th style="text-align: left; width: 50%;">Average velocity</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> 1. Average speed is the total distance traveled divided by the total time taken. Speed takes into account the total path length traveled. 2. Average speed is a scalar quantity. 3. Average speed is always positive. </td> <td style="vertical-align: top;"> 1. Average velocity is the displacement divided by the time. Velocity only takes into account the starting and ending points of an object's path. 2. Average velocity is a vector quantity. 3. Average velocity can be positive or negative depending on the direction. </td> </tr> </tbody> </table>	Average speed	Average velocity	1. Average speed is the total distance traveled divided by the total time taken. Speed takes into account the total path length traveled. 2. Average speed is a scalar quantity. 3. Average speed is always positive.	1. Average velocity is the displacement divided by the time. Velocity only takes into account the starting and ending points of an object's path. 2. Average velocity is a vector quantity. 3. Average velocity can be positive or negative depending on the direction.	2
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18(i)	(c)Carbon dioxide	1				
18(ii)	Metalloid is an element with properties intermediate between those of metals and non-metals.	1				
18(iii)	Water is a compound because:	1				

	<p>1. Its composition is fixed.</p> <p>2. They are (hydrogen and oxygen) chemically combined to each other.</p> <p>3. It has a definite formula.</p> <p>4. The properties of water are entirely different from the properties of hydrogen and oxygen. (Any two points)</p>	
18(iv)	Any one property of metals, non-metals and metalloids+ one example each.	1+1
19(i)	The examples of haploid cells produced by meiosis are sex cells, or sperm and eggs	(1 mark)
19(ii)	<p>The goal of mitosis is to produce daughter cells that are genetically identical to their mothers, with not a single chromosome more or less. (½ mark)</p> <p>Meiosis, is used for just one purpose in the human body: the production of gametes—sex cells, or sperm and eggs. (½ mark)</p> <p>When a sperm and an egg join in fertilization, the two haploid sets of chromosomes form a complete diploid set. (1 mark)</p>	(½ + ½ + 1 = 2 mark)
20(i)	(b) lateral meristem	(1 mark)
20(ii)	Length or height	(1 mark)
20(iii)	Any two characteristics of meristematic tissue. (½ mark for each characteristic)	(½ + ½ = 1 mark)
SHORT ANSWER TYPE QUESTIONS (3 MARKS)		
21	<p>a) Due to inertia of rest. Explanation</p> <p>b) Application of Newton's second law. Force is inversely proportional to time for the same change in momentum.</p> <p>c) Application of Newton's third law of motion. Explanation.</p>	<p>1</p> <p>1</p> <p>1</p>
22	<p>$m = 50/1000 = 0.05\text{kg}$</p> <p>$u = 30\text{m/s}$ $v = 0$ $s = 0.1\text{m}$</p> <p>$v^2 - u^2 = 2as$</p> <p>$0 - 900 = 2 \times a \times 0.1$</p> <p>$a = -4500\text{m/s}^2$</p> <p>$F = ma = 0.05 \times -4500 = -225\text{N}$</p> <p style="text-align: center;">OR</p> <p>$m = 1800\text{kg}$ $u = 40\text{m/s}$ $v = 0$ $t = 20\text{s}$</p> <p>$\mu = 1800 \times 40 = 72000 \text{ kgm/s}$</p> <p>$mv = 0$</p> <p>$mv - \mu/t = -3600\text{N}$</p> <p>$a = v - u/t = 0 - 40/20 = -2\text{m/s}^2$</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>1</p> <p>½</p> <p>½</p>
23	<p>(i) Any two characteristics of colloids.</p> <p>(ii) Dispersed phase and dispersion medium</p> <p>(iii) Blood, starch solution</p> <p style="text-align: center;">OR</p> <p>(i) Aerated drinks – solute-carbon dioxide, solvent-water</p> <p>(ii) Tincture of iodine-solute-iodine, solvent-alcohol</p>	<p>½ + ½</p> <p>½ + ½</p> <p>½ + ½</p> <p>½ + ½</p>

	(iii) copper sulphate solution-solute-copper sulphate, solvent-water	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
24	(a)(i) The process of intermixing of two or more different types of particles. (ii) The maximum amount of solute that can be dissolved in a given amount of solvent is called its solubility at that temperature. (b)The rate of diffusion increases with increase in temperature	1 1 1
25	<p>a.</p>  <p style="text-align: center;"><i>Fig. 6.2: Location of meristematic tissue in plant body</i></p> <p>(1/2 mark for correct diagram, 1/2 mark for each correct label) b. Collenchyma Tissue (1 mark)</p>	<p>$(\frac{1}{2} + \frac{1}{2} \times 3 = 1 \frac{1}{2} = 2 \text{ mark})$ $(2 + 1 = 3 \text{ marks})$</p>
26	<p>‘suicide bags’ Lysosomes and ($\frac{1}{2}$ mark) ‘power house’ Mitochondria ($\frac{1}{2}$ mark) when the cell gets damaged, lysosomes may burst and the enzymes digest their own cell. Therefore, lysosomes are also known as the ‘suicide bags’ of a cell. (Relevant explanation) (1 mark) The energy required for various chemical activities needed for life is released by mitochondria in the form of ATP (Adenosine triphosphate) molecules. ATP is known as the energy currency of the cell. (Relevant explanation) (1 mark) OR (a) There is shrinkage or contraction of the contents of the cell away from the cell wall. (1 mark) (b). This phenomenon is known as plasmolysis. (1 mark) Definition - The process of shrinkage of the cytoplasm as a result of loss of water from the cell. It occurs when plant cells are placed in a hypertonic solution that has a higher concentration of solutes than the cell does. (1 mark)</p>	<p>$(\frac{1}{2} + \frac{1}{2} = 1 \text{ mark})$ $(1 + 1 = 2 \text{ marks})$ $(1 + 2 = 3 \text{ marks})$</p> <p>$(1 + 1 + 1 = 3 \text{ marks})$</p>
LONG ANSWER TYPE QUESTIONS (5 MARKS)		
27	(a) OA is a straight-line graph between speed and time, and it is sloping upward from O to A. Therefore, the graph line OA represents uniform acceleration. (b) AB is a straight-line graph between speed and time, which is parallel to the time axis (x-axis). So, AB represents uniform speed. There is no acceleration from A to	1 1 1

	<p>B.</p> <p>(c) BC is a straight-line graph between speed and time which is sloping downwards from B to C. Therefore, BC represents uniform retardation or negative acceleration.</p> <p>(d) Acceleration of the body as we see from graph line OA represents it. So, the slope of velocity-time graph OA will give the acceleration of the body. Thus, Acceleration = Slope of line OA = AD/OD We have, AD = 6 m/s, and OD = 4 s So, acceleration = $6\text{m/s} / 4\text{s} = 1.5 \text{ m/s}^2$</p> <p>(e) The slope of line graph BC represents the retardation of the body. So, retardation = Slope of line BC = BE/EC We have, BE = 6m/s, EC = 16 – 10 = 6s Retardation = $6\text{m/s} / 6\text{s} = 1\text{m/s}^2$</p>	<p>2</p>
<p>28</p>	<p>a) Statement Consider an object of mass m moving along a straight line with an initial velocity u (say). It is uniformly accelerated to velocity v in time t by the application of a constant force F in time t. Then, initial momentum of the object = mu $p_1 = mu$ Final momentum of the object = mv $p_2 = mv$ \therefore Change in momentum = $mv - mu = m(v - u)$ The rate of change in momentum = $m \times (v-u) / t$ According to Newton's second law of motion, we have $F \propto m(v-u) / t$ $F = km(v-u) / t$ $F = kma \dots\dots\dots(1)$ Here, $a = (v-u) / t$ = the rate of change of velocity. = acceleration k = a constant of proportionality Putting $m = 1\text{kg}$, $a = 1 \text{ ms}^{-2}$ $\therefore k = 1$ From equation (1), we have $F = ma$ This represents the second law of motion.</p> <p>b) $F = ma$ $a = F/m = 20/2.5 = 8\text{m/s}^2$</p> <p style="text-align: center;">OR</p> <p>a) Statement of three laws b)</p>	<p>1 1/2 (figure) 1/2</p> <p>$1/2$</p> <p>$1/2$</p> <p>$1/2$</p> <p>$1/2$</p> <p>$1/2 + 1/2$</p> <p>1 + 1 + 1</p>

	<p>Mass of the object (m) = 15 kg Initial Velocity (u) = 10 m/s Final Velocity (v₁) = 15 m/s time (t₁) = 3 seconds time (t₂) = 4 seconds</p> <p>$F = m(v-u)/t = 15 \times 5/3 = 25N$ $a = v-u/t = 5/3m/s^2$ $v = u + at = 10 + 5/3 \times 4 = 16.66m/s$</p>	<p>1 1</p>												
29	<p>(a) Any one difference between solution, suspension and colloid (b) When no more solute is dissolved in a solution, it is known as saturated solution. If the amount of solute is less than the saturation level, it is known as unsaturated solution (c) Mass of solute (salt) = 40 g Mass of solvent (water) = 320 g We know, Mass of solution = Mass of solute + Mass of solvent = 40 g + 320 g = 360 g Mass by Mass percentage of solution= $\frac{\text{Mass of solute}}{\text{Mass of solution}} \times 100$ = $\frac{40 \times 100}{360}$ = 11.1 % OR (a) Concentration in terms of mass by mass percentage= mass of solute/mass of solution x 100 = $65/500 \times 100$ = 13% (b)</p> <table border="1" data-bbox="316 1503 1155 1765"> <thead> <tr> <th>property</th> <th>True solution</th> <th>colloids</th> </tr> </thead> <tbody> <tr> <td>Tyndall effect</td> <td>Does not show</td> <td>Shows tyndall effect</td> </tr> <tr> <td>Stability</td> <td>stable</td> <td>stable</td> </tr> <tr> <td>Particle size</td> <td>Less than 1 nm</td> <td>Between 1nm and 100nm</td> </tr> </tbody> </table>	property	True solution	colloids	Tyndall effect	Does not show	Shows tyndall effect	Stability	stable	stable	Particle size	Less than 1 nm	Between 1nm and 100nm	<p>1 2 2 2 2 1x3=3</p>
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	<p>(b) (i) Particle size is less than 1nm. (ii) Particles are not big enough to scatter a beam of light.</p>			
31	<p>(a)</p>  <p>½ mark for correct diagram ½ mark for each correct label Any two differences between prokaryotic and eukaryotic cell 1 mark for each difference</p>	<p>(½ + ½X5 = 2½ = 3 mark) (1+1=2 + 3 = 5 marks)</p>		
32	<p>a. i. Chloroplast ii. Cytoplasm iii. Prokaryotic cell iv. Vacuole (½ mark for each correct answer)</p>	(½X4= 2)		
	<p>b. Mitochondria and chloroplast (½ + ½ = 1mark) They are called strange organelles because both have their own DNA and ribosomes and they can make some of their own protein (1 mark)</p>	<p>(1 mark) (1 mark)</p>		
	<p>c. osmosis is the movement of water molecules from a solution with a high concentration of water molecules to a solution with a lower concentration of water molecules, through a cell's partially permeable membrane.</p>	<p>(1 mark) (2+1+1+1=5 marks)</p>		
	OR			
	<p>(a)</p>  <p>Correct diagram 1 mark ½ mark for each correct label (b) Any two differences between Parenchyma and Collenchyma (1 mark for each correct difference)</p>	<p>(1mark) (½X4 = 2) (1+1=2) (1+2+2=5)</p>		