INDIAN SCHOOL AL WADI AL KABIR

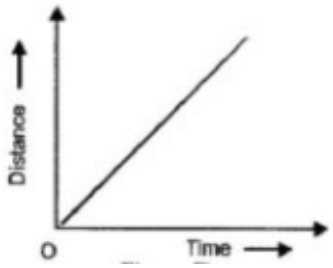
CLASS: IX	DEPARTMENT: SCIENCE	DATE: 26/09/2024
MARKS: 80	**MID-TERM ANSWER KEY [SET - 2]**	DURATION: 3 HOURS

SECTION - A

Select and write one most appropriate option out of the four options given for each ofthe questions 1 – 20.

Q. No	Questions	Marks
1	c) Both (a) and (b)	1
2	d) Particles of steam at 100 °C	1
3	c) 308K, 329K, 391K	1
4	b) (i) and (iii)	1
5	c) (i), (iii) and (iv)	1
6	a) Saltwater	1
7	c) (ii) and (iii)	1
8	a) It is flexible	1
9	d) It helps detoxify the drugs	1
10	a) By forming a network of membrane-bound tubes in the cytoplasm	1
11	c) Leucoplasts	1
12	b) Conducting tissue	1
13	d) D	1
14	d) 60km/hour	1
15	a) Localised and dividing cells	1
16	c) Conduction of water	1
Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true and R is not the correct explanation of A (c) A is true but R is false (d) A is False but R is true		
17	d) A is false but R is true.	1
18	b) Both A and R are true and R is not the correct explanation of A	1
19	b) Both A and R are true and R is not the correct explanation of A	1
20	c) A is true but R is false.	1
SECTION – B **Q. no. 21 to 26 are very short answer questions**		
21	Acetone, perfume and petrol are volatile liquids. These liquids absorb heat from our hand and changes to vapours. (evaporation). Evaporation causes cooling.	1+1

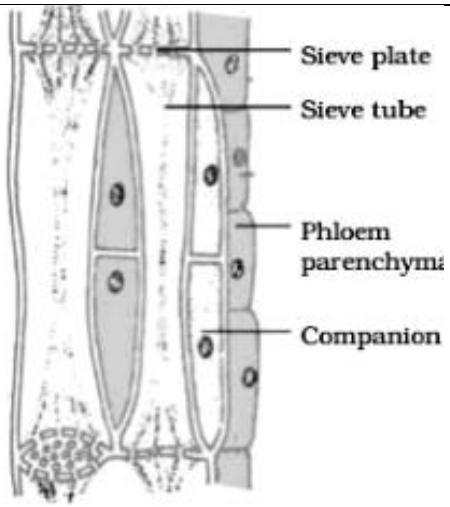
<table>
<tr><td>22</td><td>a) Diffusion is the process that allows gases like CO_2 and water to enter and exit a cell. Diffusion involves the movement of a substance or set of molecules from a location of higher concentration to one of lower concentration.
b) Membrane biogenesis is the process in which proteins and lipids are used to synthesise the cell membrane.</td><td>1

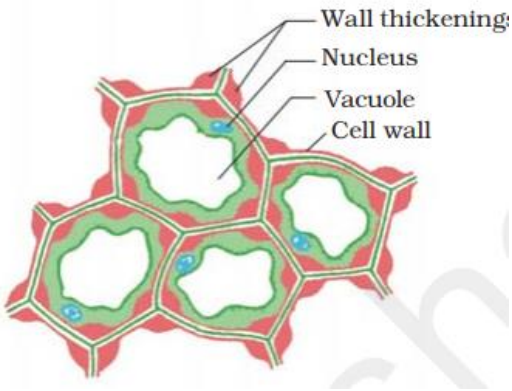
1</td></tr>
<tr><td>23</td><td>a) Membrane biogenesis is the process in which proteins and lipids are used to synthesise the cell membrane.
b) Mitosis is the type of cell division that results in the formation of two daughter cells each with the same number and kind of chromosomes as the parent cell. Meiosis is a type of cell division that results in the formation of four daughter cells each with half the number of chromosomes as the parent cell.</td><td>1+1</td></tr>
<tr><td>24</td><td>a. Body is moving with constant velocity=4m/s
b. acceleration
OR
a. vector quantity as it has both magnitude and direction
b. (net external force = 0, means acceleration is zero / object moving with constant velocity)
  </td><td>1
1

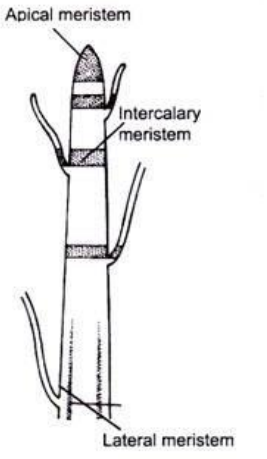
1

1</td></tr>
<tr><td>25</td><td>a. Statement
b. Inertia of motion(explanation)</td><td>1+1</td></tr>
<tr><td>26</td><td>If cells of onion peel and RBC are separately kept in a hypotonic solution, both the cells will swell and we will see that the RBC will burst easily while cells of onion peel will resist the bursting to some extent due to the presence of cell wall.
OR
a) Mitochondria and plastids
b) To increase the surface area for ATP generation.</td><td>2</td></tr>
<tr><td colspan="3">SECTION - C
Q.no. 27 to 33 are short answer questions.</td></tr>
<tr><td>27</td><td>a) Both in evaporation and boiling, liquid changes into vapours. Evaporation takes place at all temperatures whereas boiling takes place only at boiling point.
b) Rate of evaporation decreases as humidity increases.</td><td>1

1
1</td></tr>
<tr><td>28</td><td>i) Mixtures-blood, brass
Compounds-salt, sugar
ii)
<table><tr><td>compound</td><td>mixture</td></tr></table></td><td>½
½</td></tr>
</table>

		homogeneous	May be homogeneous or heterogeneous
		Constituents cannot be separated by simple methods	Constituents can be separated by simple methods.
		A compound has entirely different properties from those of its constituents.	Constituents has its own properties.
		OR	
		(i)	
		homogeneous	heterogeneous
		No visible boundary	It has visible boundaries
		Uniform composition throughout	Non-uniform composition.
		Eg.:-Sugar solution	Eg.:-Chalk powder in water
		(i) a) Particle size is less than 1nm.	
29	 Sectional view of phloem		1 m-diagram. ½ x 4=2m
30	a) Due to inertia of rest. Explanation b) Application of Newton's second law. Force is inversely proportional to time for the same change in momentum. c) Application of Newton's third law of motion. Explanation.		1 1 1
31	m=1800kg u = 40m/s v = 0 t = 20s (a)mu = 1800 x 40 = 72000 kgm/s mv = 0 (b) mv-mu/t = -3600N (c)a = v-u/t = 0- 40/20 = -2m/s2		1 1 1

32	a. Motion in a circular path with uniform speed. Ex- Merry go round/Motion of satellites around the planet (any one). b. Yes. Even though the speed is constant, the velocity changes due to the continuous change in direction. c. Speed is constant, velocity is changing	½+½ 1 1
33	a) The cells of this tissue are living, elongated and irregularly thickened at the corners. There is very little intercellular space. b)  	1+2 (½ x4=2)
	SECTION - D **Q.no. 34 to 36 are Long answer questions.**	
34	i) a) Sugar particles get into the spaces between water particles (b) Naphthalene is a sublimable substance.it changes to vapour. (c) A wooden table should be called a solid because it has a definite shape and volume. It is very rigid and cannot be compressed i.e., it has the characteristics of a solid. There is a strong force of attraction between molecules of wood and intermolecular space is the least ii) a) oil in water d) Chalk powder in water iii) As temperature increases, rate of evaporation increases. OR (i) 301^0C (ii)The temperature at which a liquid starts boiling at atmospheric pressure is known as boiling point. (iii)Water has extra energy in the form of latent heat of fusion. (iv)Any two properties of solutions	1 1 1 ½ ½ 1 1 1 1 1+1
35	a) Apical meristem is present at the growing tips of stems and roots and increases the length of the stem and the root. The girth of the stem or root increases due to lateral meristem (cambium). Intercalary meristem is the meristem at the base of the leaves or internodes (on either side of the node) on twigs	3+2

	 **Fig. 3.1** Schematic representation of position of different meristems b) **OR** a) Xylem is the complex tissue of plants that helps in the transportation of water and nutrients in the plant. Phloem refers to the living tissue which helps in the transportation of food and organic materials in the plant. b) They are living cells with thin cell wall. This tissue provides support to plants and also stores food. c) Husk of coconut is hard and stiff due to the presence of sclerenchyma tissue.	
36	(a) Statement (b)Consider an object of mass m moving along a straight line with an initial velocity u (say). It is uniformly accelerated to velocity u 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 ∴ Change in momentum = mv – mu = m(v – u) The rate of change in momentum = m×(v−u)t According to Newton's second law of motion, we have F ∝ m(v−u)t F = km(v−u)t F = kma …….(1) Here, a = v−u/t = the rate of change of velocity. = acceleration k = a constant of proportionality Putting m = 1kg, a = 1 ms $^{-2}$ ∴ k = 1 From equation (1), we have F = ma (C) Newton (d) a=F/m=10/4=2.5m/s^2	1 ½ ½ ½ ½ ½ 1½

	OR (a) Product of mass and velocity. SI unit=kgm/s (b) Lighter Explanation---v =p/m Will be greater for less mass (c)1/4th $\Rightarrow F = ma$ $\Rightarrow a = \frac{f}{m}$ When the mass is doubled force is halved m becomes 2m and f becomes f/2 $\Rightarrow a_1 = \frac{f}{4m}$ $\Rightarrow$ Change in acceleration = $a_1 / a = \frac{\frac{f}{4m}}{\frac{f}{m}} = 1/4$ **So, the acceleration reduces to 1/4th** of the original.	½+½ 1+1 1+1
SECTION – E **Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts.Internal choice is provided in one of these sub-parts.**		
37	(i) Metalloids are elements that have the properties of both metals and non-metals (ii) Elements are pure substances which are composed of only one type of particles. Compound are substances which are formed by two or more different types of elements that are united chemically in fixed proportions. (iii) (a)Water is composed of two elements-hydrogen and oxygen (b)The properties of water are different from its constituents. (c)Water can be decomposed by chemical means only. (Any two) OR Metals- Good conductors of heat and electricity, High melting and boiling points, Hard solids (any one) Eg.:- Iron, sodium, copper etc (any one) Non-metals- Low melting and boiling points, non-malleable, non-ductile (any one) Eg.:- Carbon, sulphur, oxygen (Any one non-metal)	1 1 1+1 ½ + ½ + ½ + ½
38	a) Osmosis is the movement of solvent from a region of lower solute concentration to a region of higher solute concentration through a semi-permeable membrane. b) The potato strips show a decrease in length due to exosmosis. c) A solution will be hypertonic to a cell if its solute concentration is higher than that inside the cell, and the solutes cannot cross the membrane. **OR** c) The cell dies upon the breaking of the plasma membrane as it loses its crucial components which helps in the functioning of the cell.	1 1 2 2

39	i.	9.2m/s	1
	ii.	Speed is constant- Uniform motion	1
	iii.	A has greater acceleration as it is steeper than B (Slope is more) OR	1+1
	iv.	distance travelled= Area under graph=1/2×b×h=1/2×16×30=240m	1+1