



# INDIAN SCHOOL AL WADI AL KABIR

## POST MIDTERM EXAMINATION (2023-24)

Sub: SCIENCE (086)

SET-1

Class: IX

Date: 26.11.2023

Max. Marks: 80

Time: 3 hours

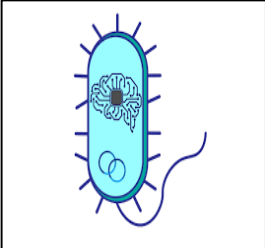
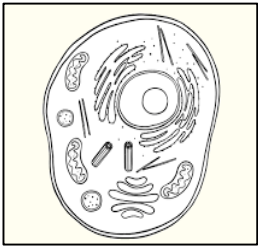
### **General Instructions:**

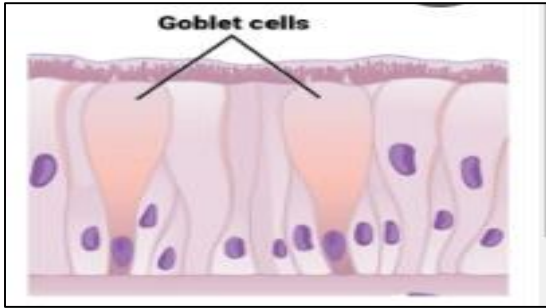
- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions.  
A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.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

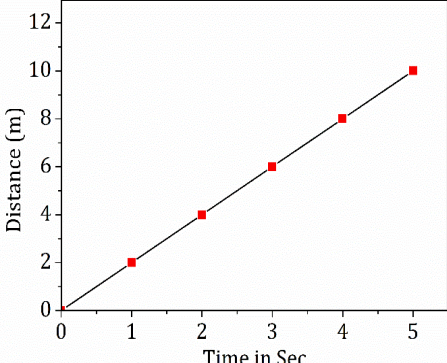
### **SECTION - A**

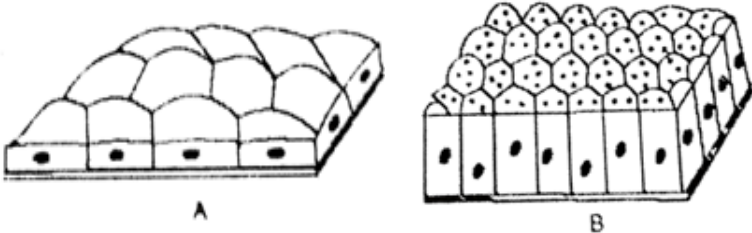
**Select and write one most appropriate option out of the four options given for each of the questions 1 – 20.**

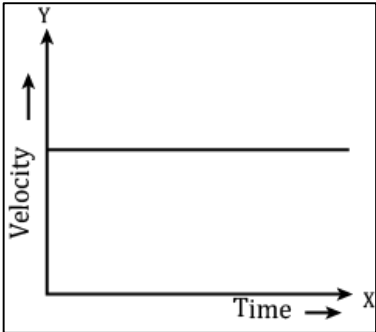
Q. No	Questions	Marks
1	Which of the following does not affect the rate of evaporation? a) Wind speed b) Surface area c) Temperature d) Insoluble heavy impurities	1
2	When we put some crystals of potassium permanganate in a beaker containing water, we observe that after sometime, the whole water turns pink. This is due to: a) Melting b) Sublimation c) Diffusion d) Evaporation	1

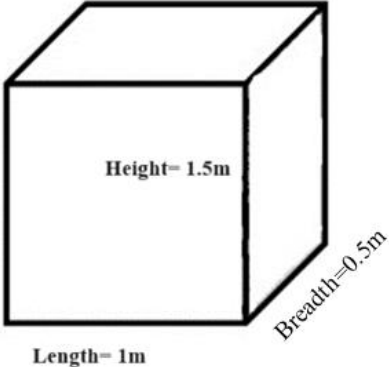
3	<p>Which of the following has highest kinetic energy?</p> <p>a) Particles of ice at 0<sup>0</sup> C</p> <p>b) Particles of water at 0<sup>0</sup> C</p> <p>c) Particles of water at 100<sup>0</sup> C</p> <p>d) Particles of steam at 100<sup>0</sup> C</p>	1
4	<p>Atoms are said to be completely filled when all the available shells are completely filled with electrons. Which of the following elements has completely filled outermost shell in its atoms?</p> <p>a) Neon (Z=10)</p> <p>b) Argon (Z= 18)</p> <p>c) Magnesium (Z = 12)</p> <p>d) Both a) and b)</p>	1
5	<p>If K and L shells of an atom are full, then what would be the total number of electrons in an atom?</p> <p>a) 2</p> <p>b) 8</p> <p>c) 10</p> <p>d) 18</p>	1
6	<p>A solution in which no more solute can be dissolved at a given temperature is known as:</p> <p>a) Unsaturated solution</p> <p>b) True solution</p> <p>c) Saturated solution</p> <p>d) Dilute solution</p>	1
7	<p>Which of the following statement is true for colloids?</p> <p>a) Colloid is a homogeneous mixture.</p> <p>b) Particles of a colloid can be seen by naked eye.</p> <p>c) Particles of colloid scatter a beam of light passing through it.</p> <p>d) All of these</p>	1
8	<p>Which of the following are covered by a single membrane?</p> <p>a) Mitochondria</p> <p>b) Lysosome</p> <p>c) Plastid</p> <p>d) None of the above</p>	1
9	<p>The image shows the bacterial cell and animal cell. Based on the structures, a student claims that the animal cell contains complex structures that are absent in bacterial cell. Which statement can the student make to support the claim?</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	1

	<p>a) Cytoplasmic content of bacterial cell is not enclosed in a thick cell wall in case of an animal cell.</p> <p>b) Nuclear material of the bacterial cell is not enclosed in a nuclear envelope as in the case of an animal cell.</p> <p>c) Animal cell contains flagella that aids in locomotion that is absent in case of bacterial cell.</p> <p>d) Animal cell contains ribosomes spread across the cell whereas in case of bacterial cell they are clumped together.</p>	
10	<p>The image shows the structure of specialised epithelium. What would be the likely function of this epithelium?</p>  <p>a) Secretion of substances.</p> <p>b) Transport of substances across permeable surface.</p> <p>c) Protection from wear and tear.</p> <p>d) Restrict movement of the tissue.</p>	1
11	<p>Intestine absorbs the digested food materials. What type of epithelial cells are responsible for that?</p> <p>a) Stratified squamous epithelium</p> <p>b) Columnar epithelium</p> <p>c) Spindle fibres</p> <p>d) Cuboidal epithelium</p>	1
12	<p>The muscular tissue which functions throughout the life continuously without fatigue is:</p> <p>a) Skeletal muscle</p> <p>b) Cardiac muscle</p> <p>c) Smooth muscle</p> <p>d) Voluntary muscle</p>	1
13	<p>In case of negative work done, the angle between force and displacement is:</p> <p>a) <math>0^\circ</math></p> <p>b) <math>45^\circ</math></p> <p>c) <math>90^\circ</math></p> <p>d) <math>180^\circ</math></p>	1

14	<p>Slope of the x-t graph is a measure of:</p> <p>a) Velocity = <math>2 \text{ ms}^{-1}</math>  b) Acceleration = <math>\frac{1}{2} \text{ ms}^{-2}</math>  c) Velocity = <math>\frac{1}{2} \text{ ms}^{-2}</math>  d) Acceleration = <math>2 \text{ ms}^{-1}</math></p>	1
		
15	<p>Skin is the outermost layer of the body which provide protection from mechanical injuries as well as help in secretion of sweat and oils. Which type of epithelium, is the skin likely composed of to facilitate all the mentioned functions?</p> <p>a) Epithelium with irregular shaped cells.  b) Epithelium arranged in many layers.  c) Epithelium having flat surface.  d) Epithelium with hair like projections for particle movement.</p>	1
16	<p>To solve the food problem of the country, which among the following is necessary?</p> <p>a) Increased production and storage of food grains.  b) Easy access of people to the food grains.  c) People should have money to purchase the grains.  d) All of the above.</p>	1
<p>Q. no 17 to 20 are Assertion - Reason based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>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.</p>		
17	<p>Assertion: A solution of table salt in a glass of water is homogeneous.  Reason: A solution having different composition throughout is homogeneous.</p>	1
18	<p>Assertion: Fodder Crops like berseem, oats etc. are also grown with cereals and pulses.  Reason: Fodder crop is food for livestock</p>	1
19	<p>Assertion: A feather and stone dropped from a height reach the ground in air at different times.  Reason: Acceleration due to gravity acting on a body is directly proportional to its mass.</p>	1
20	<p>Assertion: Cuboidal epithelium forms the lining of kidney tubules.  Reason: These are voluntary muscles.</p>	1

<b>SECTION – B</b>		
<b>Q. no. 21 to 26 are very short answer questions</b>		
21	A solution contains 60g of common salt in 240g of water. Calculate the concentration in terms of mass-by-mass percentage of the solution.	2
22	a) In what aspects, vacuoles in plant cells differ from those in animal cells? b) What would happen to the life of a cell if the plasma membrane ruptures or breaks down?	2
23	Describe the characteristics and function of spindle shaped muscle tissue. <b>OR</b> <b>Identify and differentiate</b> between the given diagrams A and B.	2
		
24	a) Define one newton of Force. b) Calculate change in momentum of the body weighing 500 g when its velocity decreases from 20 m/s to 0.20 m/s.	2
25	a) What is meant by buoyancy force? b) The volume of a 350g sealed tin is 200 cubic.cm. Find the density of the tin in g/cc. Also find the density in SI unit. <b>OR</b> a) How is Newton's second law of motion related to Universal law of gravitation? b) Stone dropped from a tree takes 2 s to reach the ground. Find its velocity on striking the ground. ( $g = 9.8 \text{ ms}^{-2}$ )	2
26	Define the following. a) Sustainable agriculture b) Photoperiod	2
<b>SECTION – C</b>		
<b>Q.no. 27 to 33 are short answer questions.</b>		
27	Define evaporation. Out of nylon and cotton clothes, which will be more comfortable during summer and why?	3
28	a) Write the electronic configuration and schematic representation of an Oxygen atom (Atomic number = 8) b) An element X has 2 electrons in its M shell which is the outermost shell. How many electrons are present in this element. <b>OR</b> a) Briefly explain Bohr-Bury scheme for distribution of electrons in different shells. b) What is an electron? Who discovered it?	3

29	Mention the role of: a) Cellulose in cell wall. b) Presence of deeply folded membrane in mitochondria. c) Digestive enzymes in lysosomes.	3
30	a) Draw a labelled diagram of a tissue that transmits stimulus in our body. b) How does this tissue enable animals to move rapidly in response to stimuli?	3
31	a) Velocity-time graph of moving particle of mass 1 kg is shown in figure.  Is any force acting on the body? Justify your answer. b) Why do you fall in the forward direction when a moving bus breaks to a stop and fall backward when it accelerates from rest?	3
32	a) What is meant by free fall? b) A man weighs 600 N on Earth. What is his mass? ( $g = 9.8 \text{ ms}^{-2}$ ). On moon his weight would be 100 N. What is acceleration due to gravity on the moon?	3
33	a) A pair of bullocks exerts a force of 140 N on a plough. The field being ploughed is 15 m long. How much work is done in ploughing the length of field? b) Derive an expression for kinetic energy of an object and also give its SI unit.	3
<b>SECTION - D</b> <b>Q.no. 34 to 36 are Long answer questions.</b>		
34	a) List any three characteristics of colloid. b) Name the two components of a colloid. c) Identify colloid from the following mixtures: Sugar in water, ink, blood, muddy water <b>OR</b> a) Write any two differences between homogeneous and heterogeneous mixture. b) Give an example for each of the following. i. Solid – liquid homogeneous mixture ii. Gas – gas homogeneous mixture iii. Liquid – liquid heterogeneous mixture	5


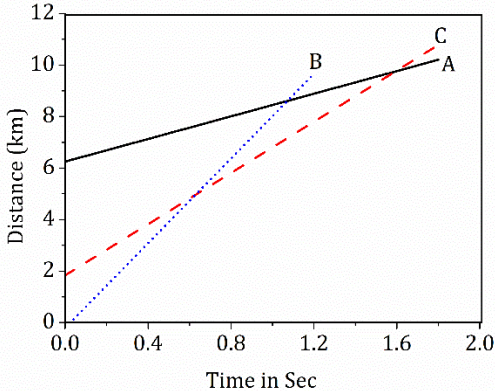
35	<p>a) What are the similarities between plastids and mitochondria.</p> <p>b) What is the contribution of Schleiden and Schwann in the discovery of cell?</p> <p>c) List any two differences between the two types of endoplasmic reticulum.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) Grass looks green, papaya appears yellow. Which is the cell organelle responsible for this? Write the structural features of this organelle.</p> <p>b) How does the genetic material appear in a non-dividing cell and explain what happens to it when the cell starts to divide?</p> <p>c) Write any two functions of the nucleus.</p>	5
36	<p>a) Differentiate between acceleration due to gravity and universal gravitational constant.</p> <p>b) Which will exert more pressure: a 100 kg mass on 10 m<sup>2</sup> or 50 kg mass on 4 m<sup>2</sup>? Give reason.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) State Archimedes principle.</p> <p>b) State the factors on which buoyant force depends.</p> <p>c) The density of brick is 15000 kg/m<sup>3</sup>. If the brick is placed on table as shown below then calculate pressure exerted by brick on table. The dimensions of brick are as:</p> <div style="text-align: center;">  </div>	5
<p><b>SECTION – E</b></p> <p><b>Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts.</b></p> <p><b>Internal choice is provided in one of these sub-parts.</b></p>		
37	<p>Rohit tested the solubility of four salts, X, Y, Z and T at different temperatures and collected the following data.</p>	

Salt dissolved	Temperature				
	290 K	313 K	323 K	343 K	353 K
	<b>Solubility ( g/ 100 g water)</b>				
X	22	34	40	93	109
Y	43	43	46	50	50
Z	27	30	34	37	40
T	25	38	42	54	64

Answer the following questions from the table:

a) What is solubility? Which salt has the highest and lowest solubility at 323 K?	2
b) i. What is the effect of temperature on the rate of solubility? ii. Write one point of difference between concentration and solubility. <b>OR</b> b) i. The solubility of which salt is least affected by increase in temperature? ii. Convert the boiling point and freezing point of water into Kelvin scale.	2
38	<p>Connective tissues are most abundant and widely distributed in the body of complex animals they are named as connective tissues because of their special function of linking and supporting other tissues or organs of the body. They range from soft connective tissues to specialized types which include cartilage, bone, adipose and blood. In all connective tissues except blood, the cell secretes fibers of structural proteins called collagen or elastin. The fiber provides strength, elasticity and flexibility to the tissue. These cells also secrete modified polysaccharide, which accumulate between the cells and fibers and act as matrix.</p> <p>Loose connective tissues have cells in fibers loosely arranged in a semi fluid ground substance for example areolar tissue present beneath the skin. Often it serves as a support framework for epithelium. It contains fibroblast and mast cells. Adipose tissue is another type of loose connective tissue located mainly beneath the skin. The cells of this tissue are specialized to store fats the excess of nutrients which are not used immediately are converted into fats and are stored in this tissue.</p>



	a) Mention any two functions of blood.	1
	b) Why is blood called as a connective tissue?	1
	c) Identify and name the tissue given below and write its specialised function.	2
	 <p style="text-align: center;"><b>OR</b></p>	
	c) What are the components of the blood? Which one of them is called the matrix?	
39	<p>The figure show distance - time graph of three object A, B and C. Study the graph and answer the following with reason.</p> 	
	a) Which of the three is travelling the fastest?	1
	b) Are all three ever at the same point on the road?	1
	c) How far has C travelled when B passes A?	2
	<b>OR</b>	
	c) How far has B travelled by the time it passes C?	2