ARMY PUBLIC SCHOOL LBS MARG, LUCKNOW
HALF YEARLY EXAMINATION: 2024-25
IX: SCIENCE (086)

TIME: 3 Hours

Max. Marks: 80

General Instructions:

This question paper consists of 39 questions in 5 sections.

i. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

ii. **Section A** consists of 20 objective type questions carrying 1 mark each.

iii. **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.

iv. **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

v. **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.

vi. **Section E** consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

Q1	The white of an egg, common salt, sugar and fine sand are added to water separately in beakers as shown below. The mixture is stirred well. A suspension will be formed in the beaker White of an egg Common salt Sugar Fine sand I II III IV (a) I. (b) II. (c) III. (d) (IV)	1
Q2	Dry ice does not wet our hands as (a) It is Solid carbon dioxide (b) It turns into gas without changing into liquid. (c) It never turns into liquid (d) None	1
Q3	A form of matter has no fixed shape but it has a fixed volume. An example of this matter is (a) Krypton (b) Kerosene (c) Carbon steel (d) Solid Carbon dioxide	1
Q4	Once the ice cubes completely get converted into water, the volume of water will be (a) equal to V (b) more than V (c) equal to 2V (d) less than V	1
Q5	Rakesh was preparing a true solution of sugar in water in a beaker. By chance, he added sugar in excess. He kept stirring the solution for some time but the sugar settled down in the beaker. He filtered the solution. What will be the nature of the filtrate? (a)True Solution (b) Saturated solution	1

	(c) Colloidal solution. (d) Suspension	
Q6	Select the following which has highest kinetic energy? (a)Particles of water at 0 °C (b)Particles of ice at 0 °C (c)Particles of steam at 100 °C (d)Particles of water at 100 °C	1
Q7	Two chemical species X and Y combine together to form a product P which contains both X and Y X-Y→P. X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following concerning the species X,Y and P are correct? (i) P is a compound (ii) X and Y are compounds (iii) X and Y are elements (iv) P has a fixed composition (a) (i), (ii) and (iii) (b) (ii), (iii) and (iv) (c) (i), (iii) and (iv) (d) (i), (ii) and (iv)	1
Q8	Which meristem increase the length of the stem and the root ? (a) Apical meristem (b) Lateral meristem (c)Intercalary meristem (d)Cambium	1
Q9	Two modification of parenchyma are :- (a) Collenchyma & Scleranchyma (b) Chlorenchyma &Aerenchyma (c) Xylem & Phloem (d) Primary meristem & Secondary meristem	1
Q10	Chlorencyma is :- (a) Parenchyma which contains chlorophyll (b) Meristem which contains chlorophyll (c) Parenchyma with large air cavities (d) Storage tissue contains no pigment	1
Q11	Which tissue makes up the husk of coconut? (a) Meristem (b) Parenchyma (c) Collenchyma (d) Sclerenchyma	1
Q12	Which out of the following is not a function of vacoule? (a) Storage (b)Providing turgidity & rigidity to the cell (c) Waste excretion (d) Locomotion	1
Q13	Newton's law of gravitation applies to (a)Small bodies only (b)Light (c)All bodies irrespective of their size (d)Both (B) and (C)	1
Q14	A football and a stone has same mass (a)Both have same inertia (b)Both have same momentum (c)Both have different inertia (d)Both have different momentum	1
Q15	Stroma is present in :- (a)Mitochondria (b)Leucoplast (c)Endoplasmic reticulum (d) Lysosome	1
Q16	The maximum speed of the train is 90 km/hr. It takes 10 hour to complete a distance of 500 km. Find the ratio of average speed to maximum speed. (a)2:3 (b)5:9 (c)4:7 (d)7:13	1

Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by 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.

Q17	Assertion: The Tyndall effect can be observed when sunlight passes through the canopy of dense forest.	1
	Reason: Scattering of light by the particles of dust and smoke in the air cause dispersion.	
Q18	Assertion: The nuclear region in bacterial cell is poorly defined.	1
	Reason: There is absence of nuclear membrane in bacterial cell	
Q19	Assertion. If we drop a stone and a sheet of paper from a balcony of first floor, then stone will reach the ground first.	1
	Reason. The resistance due to air depends on velocity only.	
Q20	Assertion: The graph between two physical quantities P and Q is straight line, when P/Q is constant.	1
	Reason. The straight line graph means that P is proportional to Q or P is equal to constant multiplied by Q.	

Section B
Question No. 21 to 26 are very short answer questions

Q21	(a) Why Compressed natural gas (CNG) is used as fuel these days in vehicles?	2
	(b) Why steel is used to make railway lines.	
Q22	Write two differences between plasma membrane & cell wall?	2
Q23	(a) Which two organelles produce some of their own protein?	1+1
	(b) What is the energy currency of the cell?	
Q24	An iron sphere of mass 1 kg is dropped from a height of 10 m. If the acceleration of sphere is 9.8 ms⁻². calculate the momentum transferred to the ground by the ball.	2
Q25	Derive the mathematical relation of Newton's second law of motion.	2
Q26	Write difference between meristematic cell & permanent cell?	2
	OR	
	Write major function of stomata present in epidermis?	

Section C
### Question No. 27 to 33 are short answer questions.

Q27	A solution contains 40 g of common salt in 320g of water. Calculate the concentration in terms of mass/mass percentage of solution.	3
Q28	A group of students took an old shoe box and covered it with a black paper from all sides. They fixed a source of light (a torch) at one end of the box by making a hole in it and made another hole on the other side to view the light. They placed a milk sample contained in a beaker tumbler in the box as shown in the figure. They were amazed to see that milk taken in the tumbler was illuminated. They tried the same activity by taking a salt solution but found that light simply passed through it.	3
	(a) Explain why the milk sample was illuminated. Name the phenomenon involved	

- Shoe box
- Glass tumbler containing sample

Source of ...
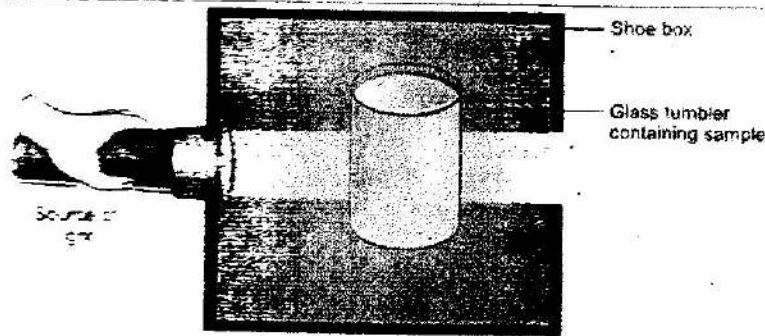
(b) Same results were not observed with a salt solution. Explain.
(c) Can you suggest two more solutions which would show the same effect as shown by the milk solution?

Q29	Write the functions of parenchyma tissue with diagram?	3
Q30	If the organization of a cell is destroyed due to some physical and chemical change influence, what will happen?	3
Q31	What is the force of gravity on a body of mass 1 kg lying on the surface of the earth? Assume mass of the earth $= 6 \times 10^{24}$ kg, radius of the earth $= 6.4 \times 10^6$m, and $G = 6.7 \times 10^{11}$ Nm²/kg2.	1+2
Q32	The velocity of a body of mass 10kg increases from 4 m/s to 8 m/s when a force acts on it for 2s. (a) What is the momentum before the force acts? (b) What is the momentum after the force acts? (c) What is the gain in momentum per second? (d) What is the value of the force?	0.5+0. 5+1+ 1
Q33	A bullet of 10 g strikes a sand bag at a speed of 10^3 m/s and gets embedded after travelling 5 cm. Calculate (i) The resistive force exerted by the sand on the bullet. (ii) The time taken by the bullet to come to rest	1.5+1. 5

Section D
Question No. 34 to 36 are long answer questions.

Q34	(a)Iron filings and sulphur were mixed together and divided into two parts 'A' and 'S'. Part 'A' was heated strongly while Part 'S' was not heated. Dilute hydrochloric acid was added to both the parts and evolution of gas was seen in both the cases. How will you identify the gases evolved? (b)You are given two samples of water labelled as 'A' and 'B'. Sample 'A' boils at 100°C and sample 'B' boils at 102°C. Which sample of water will not freeze at 0°C? Comment. What is the dispersed phase and dispersion medium of an emulsion?	5
Q35	What is Xylem? Explain its structure? Which one of its component is very important & why? OR Enlist & Explain four elements of phloem? Which one of them is most important & why?	5
Q36	(a)Two stones are thrown vertically upwards simultaneously with their initial velocities. Prove that the ratio of heights reached by them would be in the proportion of u1:u2. Assume upward acceleration is -g and downward acceleration is +g. (b) A car starts from rest and moves with a uniform acceleration of 0.1 m/s 2 for 2 minutes. Find: (a) The speed acquired	3+2

4

(b) The distance travelled

Question 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.

Q37	In certain investigatory project 150 ml of water is taken in each of the four beakers A , B , C and D. Beaker A and B are maintained at temperature 25 degree Centigrade while C and D are maintained at temperature 65degree Centigrade. Four crystals of copper sulphate of approximately same mass (say 2g) are taken and two of them are ground into powder form. Now, crystals are added in beaker A and C while powdered form of the salt are added in beaker B and D respectively. Mark the correct answer in each of the following questions: (i) In which beaker the intermixing will be the quickest? 3 (ii) Colour of solution after intermixing will be? (iii) Phenomenon responsible for intermixing is called? Also define the term.	1+1+2
Q38	Cork is a substance which comes from the bark of the tree. This was in the year 1665 when Robert Hook made this chance observation through a self-designed microscope. He called honeycomb like boxes "cells". Cell is a latin word for a "little room". Answer the following question :- (a)What is the source of cork.Is it living or dead? (b)What is the latin word for a "Little room" (c)Who discovered cells for the first time and in which year? 4	1+1+2
Q39	Newton's first law of motion states that a body at rest will remain at rest position only and a body which is in motion continues to be in motion unless otherwise they are acted upon by an external force. In other words, all objects resist a change in their state of motion. In a qualitative way, the tendency of undisturbed objects to stay at rest or to keep moving with the same velocity is called inertia. This is why, the first law of motion is also known as the law of inertia. Answer the following questions. (i) The first law of motion is also known as? 4 (ii) If no external force is applied on the object then the acceleration of the object is? (iii) State Newton's first law of motion.	1+1+2

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