



INDIAN SCHOOL SOHAR  
PERIODIC TEST II (2022 - 23)  
SCIENCE (086)

Total No of Pages : 8

CLASS: IX

DATE: 27/09/2022

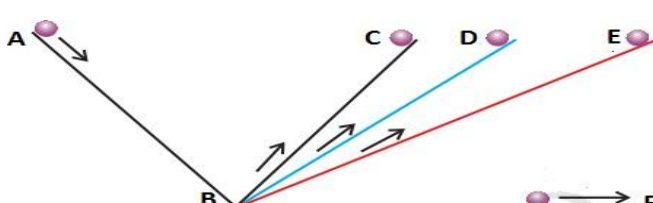
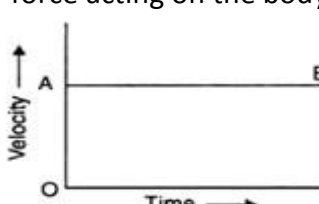
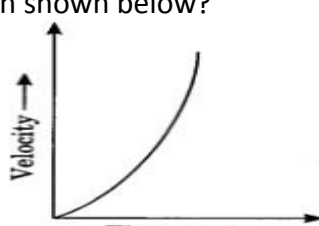
MAX MARKS: 80

TIME: 3 HOURS

**General Instructions:**

- (i) The question paper comprises of four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
- (ii) Section A - question no. 1 to 27- These questions are very short answer questions, assertion - reason type questions, and competency based questions (multiple choice questions, passage based questions, case based questions and source based questions)
- (iii) Section B - question no.28 is short answer type question, carrying 2 marks.
- (iv) Section C - question no.29 to 33 are short answer type questions, carrying 3 marks each.
- (v) Section D - question no.34 to 36 are long answer type questions carrying 5 marks each.
- (vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (vii) Wherever necessary, neat and properly labelled diagrams should be drawn.

**SECTION - A**

1	<p>The figure given below shows Galileo's experiment to demonstrate motion of an object on an inclined plane. Observe the diagram carefully and identify the type of motion of the marble ball from B to F.</p> 	1
2	<p>There are two types of forces X and Y. The forces belonging to type X can produce motion in a stationary object. On the other hand, forces belonging to type Y cannot produce motion in a stationary object but can change the shape of the object. What is the general name of the forces such as (i) X, and (ii) Y?</p>	1
3	<p>What type of motion is exhibited by a freely falling body?</p>	1
4	<p>Velocity-time graph of a moving body of mass 0.5kg is shown in the figure given below. Is there any force acting on the body? Justify your answer.</p>  <p style="text-align: center;"><b>OR</b></p> <p>What conclusion can be drawn about the acceleration of a moving body from the velocity-time graph shown below?</p> 	1

5	Name the state of matter in which particles just move around randomly because of very weak force of attraction.	1
6	Identify the physical states of H <sub>2</sub> O at 0°C.	1
7	Convert 373°C to Kelvin scale.	1
8	Identify the solute and solvent in 'tincture of iodine'. <b>OR</b> What is an emulsion?	1
9	Name process by which a cell engulfs its food.	1
10	Which type of tissue is found at the lower surface of a leaf? <b>OR</b> Name the energy currency of a cell.	1
11	What is the chemical nature of cell wall?	1
<p>Question No. <b>12 to 16</b> consists of two statements – <b>Assertion (A)</b> and <b>Reason (R)</b>.            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 but (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>		
12	<p><b>Assertion (A):</b> The distance and displacement are different physical quantities.  <b>Reason (R) :</b> Distance is the length of actual path while displacement is the shortest distance measured from the initial to the final position.  <b>OR</b>  <b>Assertion(A) :</b> Velocity of an object is changing at a uniform rate, then average velocity is given by the arithmetic mean of initial velocity and final velocity for a given period of time.  <b>Reason(R) :</b> The magnitude of speed and velocity of a moving body is equal, only if the body moves in a single straight line path in a definite direction.</p>	1
13	<p><b>Assertion(A) :</b> Greater is the mass of a body, greater is its inertia.  <b>Reason(R) :</b> Mass of a body is a measure of its inertia.</p>	1
14	<p><b>Assertion (A):</b> During a chemical change, no new substance is formed.  <b>Reason (R) :</b> Burning a candle involves both physical and chemical changes.</p>	1
15	<p><b>Assertion (A) :</b> The growth of plants occurs only in certain specific regions.  <b>Reason (R) :</b> Meristematic tissue is located only in specific regions.</p>	1
16	<p><b>Assertion (A) :</b> Lysosomes are the sites for protein synthesis.  <b>Reason (R) :</b> Cell wall is present in plant cell.</p>	1
<p>Question No.<b>17 to 21</b> are multiple choice questions.</p>		
17	<p>Nila plotted the graph of a uniformly accelerated car moving on a straight road. Which of the statement below correlates with her observation?            (a) The distance–time graph is a straight line parallel to the time axis.            (b) The velocity–time graph is a straight line inclined to time axis.            (c) The velocity–time graph is a straight line parallel to time axis.            (d) The speed–time graph is a straight line parallel to time axis</p>	1
18	<p>Seetha visited a natural gas compressor unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends, she got confused. Help her to identify the correct set of conditions.            (a) Low temperature, low pressure            (b) High temperature, low pressure            (c) Low temperature, high pressure            (d) High temperature, high pressure  <b>OR</b></p>	1

Kinetic energy of particles of water in three vessels A, B and C are  $E_A$ ,  $E_B$  and  $E_C$  respectively and  $E_A > E_B > E_C$ . Arrange the temperatures,  $T_A$ ,  $T_B$  &  $T_C$  of water in the three vessels in increasing order.

(a)  $T_A < T_B < T_C$  (b)  $T_C < T_B < T_A$   
 (c)  $T_B < T_C < T_A$  (d)  $T_C < T_A < T_B$

19 Melting points of four solids A, B, C and D are 488K, 84K, 390K and 800K. The inter particle forces of attraction are in the order.

(a)  $A < B < C < D$  (b)  $B < C < A < D$   
 (c)  $C < B < A < D$  (d)  $B < D < C < A$

20 Analyze the following and pick out the option that has all correctly matched pairs:

(i)	Leucoplasts	-	A. Provide turgidity and rigidity to the cell
(ii)	Ribosomes	-	B. Storage of starch, proteins, etc.
(iii)	Golgi bodies	-	C. Cell cleaning
(iv)	Vacuoles	-	D. Formation of lysosomes
		-	E. Protein synthesis

- (a) i-E, ii-A, iii-B, iv-C  
 (b) i-B, ii-E, iii-D, iv-A  
 (c) i-D, ii-C, iii-A, iv-E  
 (d) i-C, ii-D, iii-E, iv-B

OR

Which of the following function is NOT carried out by endoplasmic reticulum?

- (a) Transport of proteins to various places in the cell.  
 (b) Manufacture of lipids important for cell function.  
 (c) Waste disposal system of the cell.  
 (d) Some proteins and lipids produced here function as enzymes and hormones.

21 By means of differentiation, various types of permanent tissues are developed in plants. Which of the following is **NOT** a permanent plant tissue?

(a) Xylem (b) Aerenchyma  
 (c) Intercalary meristem (d) Chlorenchyma

Question No. 22 to 27 are passage based, case based and source based questions.

22 Read the following and answer the questions from 22(i) to 22(iv)  
 Newton's laws of motion are three basic laws of mechanics that describe the relationship between the motion of an object and the forces acting on it. These laws can be rephrased as follows:

- A body remains at rest or in motion at a constant speed in a straight line, unless acted upon by a force.
- When a body is acted upon by a force, the rate of change of its momentum equals the force.
- If two bodies exert forces on each other, these forces have the same magnitude but opposite directions.

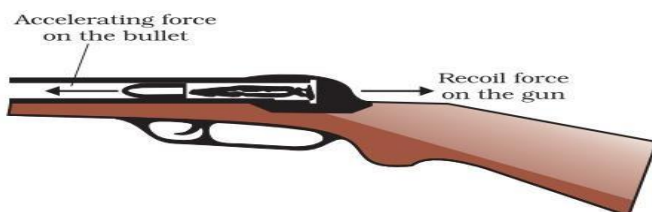
Answer the following questions based on these laws.  
 22(i) When the card is flicked with the finger the coin placed over it falls in the tumbler. This phenomenon can be best explained by making use of:



- (a) Newton's third law of motion  
 (c) Newton's first law of motion

- (b) Newton's law of gravitation  
 (d) Newton's second law of motion

22(ii) While looking at the diagram below, Neetu concluded the following regarding the action and reaction forces.



The action and reaction forces:

- (i) always act on the same body but in opposite directions  
 (ii) always act on different bodies in opposite directions  
 (iii) have same magnitudes and directions  
 (iv) act on different bodies and never cancel each other

Which of the above statements are correct?

- (a) i and iii  
 (c) ii, iii and iv  
 (b) ii and iv  
 (d) i, ii, iii and iv

22(iii) A fielder pulls his hands gradually with the moving cricket ball while holding a catch. This enables the fielder to:

- (a) increase the rate of change of momentum  
 (b) decrease the rate of change of momentum  
 (c) increase the force exerted by the balls on the hands  
 (d) exert larger force on the ball

22(iv) We fall in the forward direction when a moving bus brakes to a stop and fall backwards when it accelerates from rest. Choose the correct law which explains this phenomenon.

- (a) The sum of momenta of the two objects before collision is equal to the sum of momenta after the collision.  
 (b) For every action in nature there is an equal and opposite reaction.  
 (c) The acceleration in an object is directly related to the net force and inversely related to its mass.  
 (d) An object remains in a state of rest or of uniform motion in a straight line unless compelled to change that state by an applied force.

23 Read the following and answer the questions from 23(i) to 23(iv)

A pure substance consists of a single type of particle, whereas a mixture contains more than one substance. A mixture can be either homogeneous or heterogeneous: a mixture, in which constituents are distributed uniformly, such as salt in water, is called homogeneous, whereas a mixture, whose constituents are clearly separate from one another, such as sand in water, is called heterogeneous.

23(i) Sana is preparing notes on pure substances. She is getting confused. Which of the following statements is true for pure substances?

- (i) Pure substances contain only one kind of particles  
 (ii) Pure substances may be compound or mixtures  
 (iii) Pure substances have the same composition throughout

(iv) Pure substances can be exemplified by all elements other than silver.

(a) (i) and (ii)

(b) (i) and (iii)

(c) (i) and (iv)

(d) (ii) and (iv)

23(ii) Anna was eating jelly. Sara, who was playing with mud, came to her asking for jelly. Anna remembered what she had learnt about colloids in her class. What types of colloids are mud and jelly?

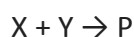
(a) Mud is a solid-liquid colloid and jelly is liquid solid colloid.

(b) Both are solid-solid colloids.

(c) Mud is solid-solid colloid and jelly is solid-liquid colloid.

(d) Mud is a liquid-solid colloid and jelly is a solid-liquid colloid.

23(iii) Two reactants, X and Y, combine together to form a product P.



X and Y cannot be broken down into simpler substances by simple chemical reactions.

Which of the following is correct about X, Y, and P?

(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) (i), (ii) and (iv)

(c) (ii), (iii) and (iv)

(d) (i), (iii) and (iv)

23(iv) Dhyuthi added some chalk powder to a beaker containing water. After shaking the beaker vigorously, she kept it undisturbed for 5 minutes and observed carefully. What type of mixture is prepared by Dhyuthi?

(a) A homogeneous mixture which is stable

(b) A homogeneous mixture which is unstable

(c) A heterogeneous mixture which is unstable

(d) A heterogeneous mixture which is stable

24 **Read the following and answer the questions from 24(i) to 24(iv)**

4

The entire surface of a plant has an outer covering epidermis. In some plants, living in very dry habitats, the epidermis may be thicker since protection against water loss is critical. Epidermal cells on the aerial parts of the plant often secrete a waxy, water-resistant layer on their outer surface. We can observe small pores here and there in the epidermis of the leaf. As plants grow older, the outer protective tissue undergoes certain changes.

24(i) Which of the following(s) is/are the function(s) of the structure shown in the diagram?

(i) Exchange of gases with the atmosphere

(ii) Protects all parts of the plant

(iii) Plays important role in transpiration

(iv) None of above

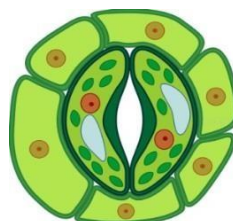
Choose the correct option:

(a) (i) and (iii)

(b) Only (i)

(c) (ii) and (iii)

(d) Only (iv)



24(ii) Which of the following statement claims the function of lignin?

(a) Thickens walls to give them mechanical support

(b) Give buoyancy to the aquatic plants

(c) Makes the tissue impervious to gases and water

(d) All of the above

24(iii) Select the CORRECT option in context to the role of epidermal cells of the root:

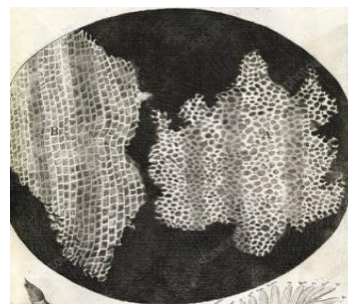
- (i) Transport of food to different parts of the plants
- (ii) They increase the girth of the roots
- (iii) Absorb water and essential minerals from the soil
- (iv) Bear long hair like parts that increase the total absorptive surface area

Choose from below:

- (a) (i) and (ii)
- (b) (ii) and (iii)
- (c) (i) and (iv)
- (d) (iii) and (iv)

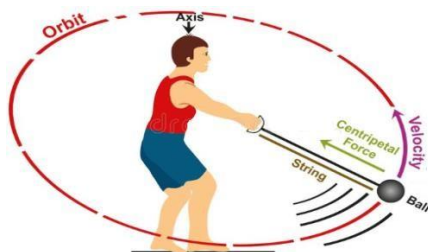
24(iv) What is the name and importance of the cell shown in the diagram which is present in the outer protective tissue of the trunk of a tree?

- (a) Parenchyma cells which generally stores food
- (b) Cork cells which are dead, compactly arranged and they are impervious to gases and water
- (c) Apical meristem cells which increases the length of the stem and roots
- (d) Sclerenchyma cells which are dead and provides strength to the plant parts



25 Read the following and answer the questions from 25(i) to 25(iv)

During the annual school sports meet Amit participated in the hammer throw competition. He rotated the hammer in a circular path with constant speed by holding the string. Then he released the hammer and it travelled a distance of 61m in a straight line tangential to the circular path.



25(i) Why is the motion in a circle with constant speed called an accelerated motion?

25(ii) Amit released the hammer after 5 rotations. In which direction will the hammer travel after it is released?

25(iii) The circumference of a circle of radius  $r$  is given by  $2\pi r$ . If the hammer takes  $t$  seconds to go once around the circular path of radius  $r$ , write the mathematical expression for calculating the speed  $v$ .

25(iv) The hammer completed one round of rotation in a circular path of radius 1.8m in 2s. What will be the distance covered and displacement at the end of 7s?

26 Read the following and answer the questions from 26(i) to 26(iv)

Sam wanted to prepare a strong solution of sodium chloride in water. He poured 100 g of water into a beaker and started adding sodium chloride. To his surprise, after adding 35g of sodium chloride, no more sodium chloride dissolved. He tried his best by vigorously shaking, but sodium chloride remained undissolved. He heated the beaker and observed that some more sodium chloride dissolved, but when the beaker was again placed at room temperature, the extra sodium chloride separated out.

26 (i) How will you justify this observation as a science student?

26(ii) Will the mixture prepared by Sam show the Tyndall effect? Give a reason for your answer.

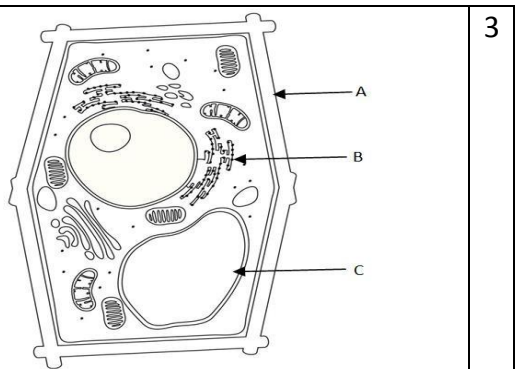
	26(iii) How will you transform a saturated solution into an unsaturated solution without adding any additional solvent? 26(iv) To make a saturated solution, 36 g of sodium chloride is dissolved in 100 g of water at 293K. What will be its concentration at this temperature?	
27	<p>Read the following and answer the questions from <b>27(i) to 27(iv)</b></p> <p>The chromosomes in the nucleus of a cell contain information for inheritance of features from parents to next generation in the form of DNA molecules. The DNA in the cell nucleus is the information source for making proteins. If the information is different, different proteins will be made. Different proteins will eventually lead to different body designs. (Source: NCERT Class 10 Science)</p> <p>27(i) Varun is willing to undergo a DNA test which can identify mutations in genes, chromosomes or proteins. Explain him how genes and DNA are related to each other.</p> <p>27(ii) Sejal, while observing samples of bacteria and plant cell under electron microscope, saw very clear difference between their nucleus. Help her to classify these two samples based on their nucleus characteristics.</p> <p>27(iii) 'Nucleus covering has significant role in cell function.' Explain.</p> <p>27(iv) Dr. Desai, a geneticist, explained during his lecture about karyotype test which shows the size, shape and number of chromosomes. His question is, 'what is chromatin and what is its relation with chromosome?' Help him to clear his doubt by answering this question.</p>	5

**SECTION – B**

28	A train starting from rest attains a velocity of 54km/h in 5 minutes. Assuming that the acceleration is uniform, find (i) the acceleration and (ii) the distance travelled by the train for attaining this velocity.	2
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**SECTION – C**

29	<p>Observe the following velocity-time graph of a body in motion and answer the questions that follow.</p> <p>(a) Which part of the graph represents uniform velocity of a body? (b) What is the initial velocity of the body? (c) Calculate the acceleration of the body from C to D. (d) What is the displacement of the body in the first 8 seconds of the motion?</p>	3
30	<p>(a) Why does the temperature of a substance remain constant during its melting point or boiling point? (b) Which gas is called dry ice? Why?</p> <p style="text-align: center;"><b>OR</b></p> <p>Draw flow chart for the interconversion of three states of matter. Name the process of each interconversion.</p>	3
31	<p>(a) Give two points of differences between mixtures and compounds. (b) Which of the following are physical changes? Bending of iron rod, rusting of iron, drawing a wire of iron metal</p>	3

32	<p>(a) Identify the label A in given diagram and state its function.</p> <p>(b) Name the granule like structure labelled as B in given diagram and mention its location.</p> <p>(c) Write down the functions of organelle labelled as C in the given diagram.</p>	
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33	<p>Explain types of permanent tissue with the help of a flow chart.</p> <p style="text-align: center;"><b>OR</b></p> <p>Justify each of the following statements:</p> <p>(a) Cell is the structural unit of life.</p> <p>(b) Plasma membrane is described as selectively permeable membrane.</p> <p>(c) Lysosomes are known as 'suicidal bags' of the cell.</p>	3
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**SECTION – D**

34	<p>(a) What is the acceleration of a body moving with uniform velocity in a straight line path?</p> <p>(b) Write any two differences between speed and velocity.</p> <p>(c) A motor cyclist drives from A to B with a speed of 30km/h and returns back with a speed of 20km/h. Find his average speed.</p> <p style="text-align: center;"><b>OR</b></p> <p>(a) Define one Newton force.</p> <p>(b) Using Newton's second law of motion, derive the relation between force and acceleration.</p> <p>(c) The velocity of a body of mass 10kg increases from 72km/h to 90km/h when a force acts on it for 3s.</p> <p style="padding-left: 20px;">(i) What is the momentum before the force acts?</p> <p style="padding-left: 20px;">(ii) What is the momentum after the force acts?</p> <p style="padding-left: 20px;">(iii) What is the value of the force acting on it?</p>	5
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35	<p>(a) How does evaporation differ from boiling? (any two points)</p> <p>(b) It is a hot summer day. Sayan and Reema are wearing cotton and nylon clothes, respectively. Who do you think would be more comfortable and why?</p> <p>(c) How the rate of evaporation is affected with increase in humidity? Give reason for your answer.</p> <p style="text-align: center;"><b>OR</b></p> <p>(a) Suggest an activity to show that the rate of diffusion of liquids decreases with increase in density of the liquid.</p> <p>(b) Give reason for the following:</p> <p style="padding-left: 20px;">(i) Doctors advise putting strips of wet cloth on the forehead of a person having a high fever.</p> <p style="padding-left: 20px;">(ii) We see water droplets on the outer surface of a glass containing ice cold water.</p> <p style="padding-left: 20px;">(iii) Naphthalene balls disappear with time without leaving any solid.</p>	5
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36	<p>(a) Bring out three differences between plant cell and animal cell.</p> <p>(b) Give the structural characteristics of mitochondria.</p> <p>(c) Identify the type of tissue present in the following:</p> <p style="padding-left: 20px;">(i) Coconut husk                      (ii) tendrils of climbers</p> <p style="text-align: center;"><b>OR</b></p> <p>Give names of complex permanent tissue. Explain any one in detail with labelled diagram.</p>	5
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\*\*\*\*\*THE END\*\*\*\*\*



