DELHI INTERNATIONAL SCHOOL
## HALF YEARLY EXAMINATION (2024-25)
SUBJECT – SCIENCE (086)
CLASS – IX

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. Answers 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.

TIME: 3 Hours   **MM:80**

S.No.	SECTION-A	Marks
1.	Which of the following settles down when allowed to stand undisturbed doe sometimes?	1
a)	Copper sulphate solution	
b)	Blood	
c)	Muddy water	
d)	Solution of egg albumin in water	
2.	Which of the following phenomena would increase on rising temperature?	1
a)	Diffusion, evaporation, compression of gases	
b)	Evaporation, compression of gases, solubility	
c)	Evaporation, diffusion, expansion of gases	
d)	Evaporation, solubility, diffusion, compression of gases	
3.	The symbol of cadmium is	1
a)	Ca	
b)	Cu	
c)	Cm	
d)	Cd	
4.	The atomicity of $K_2Cr_2O_7$	1
a)	9	
b)	11	
c)	10	

	d)	12	1
5.		Scattering of light occurs when a beam of light is passed through:	1
	a)	Water	
	b)	Sodium chloride solution	
	c)	Blood	
	d)	Copper sulphate solution	
6.		A shining thick liquid is often used in glass thermometers. Name it.	1
	a)	Gallium	
	b)	Mercury	
	c)	Bromine	
	d)	Calcium	
7.		Tubular structures of Golgi apparatus arranged parallel to each other in form of stacks are called as:	1
	a)	Cisternae	
	b)	Cristae	
	c)	Thylakoid	
	d)	Vesicles	
8.		Identify the following figure.	1
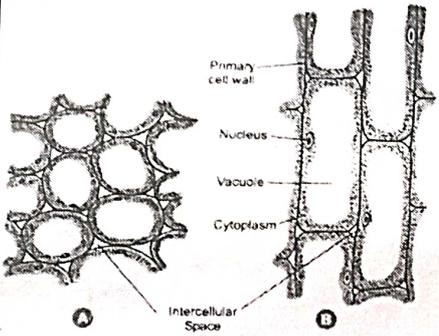
	a)	Sclerenchyma tissue	
	b)	Collenchyma tissue	
	c)	Parenchyma tissue	
	d)	None of the above	
9.		The presence of _____ enables the plant and bacterial cells to exist in hypotonic solution without bursting.	1
	a)	Plasma membrane	
	b)	Cell wall	
	c)	Vacuoles	
	d)	Endoplasmic reticulum	
10.		A student inserted a nail in the trunk of a tree at a height of 2 meter from the ground level. After 3 years, the nail will-	1
	a)	Move upwards	
	b)	Move downwards	
	c)	Move sideways	
	d)	Remain at the same position	
11.		An athlete does not come to rest immediately after crossing the winning line due to the	1
	a)	Inertia of rest	
	b)	None of these	
	c)	Inertia of direction	
	d)	Inertia of motion	
12.		The speed of a car weighing 1500 kg increases from 36 km/h to 72 km/h uniformly.	1

	What will be the change in momentum of the car?	
a)	15000 kg km/h	
b)	15000 kg m/s	
c)	54000 kg m/s	
d)	54000 g m/s	1

13. In the following diagram the direction of the boat will be

a)	move towards the shore	
b)	move away from the shore	
c)	none of these	
d)	remain stationary	1

14. The acceleration produced by a force of 5 N acting on a mass of 20 kg in m/s^2 is :

a)	100	
b)	0.25	
c)	4	
d)	2.5	1

15. The product of mass and velocity is called

a)	Acceleration	
b)	Momentum	
c)	Gravitation	
d)	Revolution	

16. Which of the following is the characteristic of distance travelled by an object?

a)	It has only magnitude and no specific direction	1
b)	It has a magnitude as well as specific direction	
c)	It can be zero	
d)	The distance travelled by an object is less than the magnitude of the displacement of the object.	

17. Assertion (A): The valency of aluminium is 3 and oxygen is 2.
Reason (R): The chemical formula of aluminium oxide is Al_3O_2.

a)	Both A and R are true and R is the correct explanation of A.	1
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.	

18. Assertion (A): Carbon dioxide and oxygen move across the cell membrane by a process called diffusion.
Reason (R): This movement is due to cells' affinity towards gases.

a)	Both A and R are true and R is the correct explanation of A.	1
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.	

19. Assertion (A): The speed of the car is constant, its velocity is not constant because the | 1

direction of the car is changing continuously.

Reason (R): The direction of velocity is the same as the direction of displacement of the body.

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.

20. Assertion (A): While walking on ice, one should take small steps to avoid slipping.

Reason (R): This is because smaller steps ensure smaller friction.

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.

1

SECTION - B

21. Differentiate between evaporation and boiling. — **2**

22. Define Law of constant proportion, with an example — **2**

23. Why is epidermis important for the plants? — **2**

24. Discuss why?
A) Growth of a plant occur in specific regions.
B) Cells of sclerenchymatous tissue have narrow lumen.
C) Cork is impervious to gases and water.
D) Epidermal layer of desert plants possesscutin. — **2**

25. The position of a body at different times is recorded in the table given below:- — **2**

Time (s)	0	1	2	3	4	5	6	7	8
Displacement (m)	0	6	12	18	24	30	36	42	48

   A. Draw the displacement time graph for the above data.
   B. What is the slope of graph?

26. A ball starts from rest and rolls down 16m down an inclined plane in 4 s. — **2**
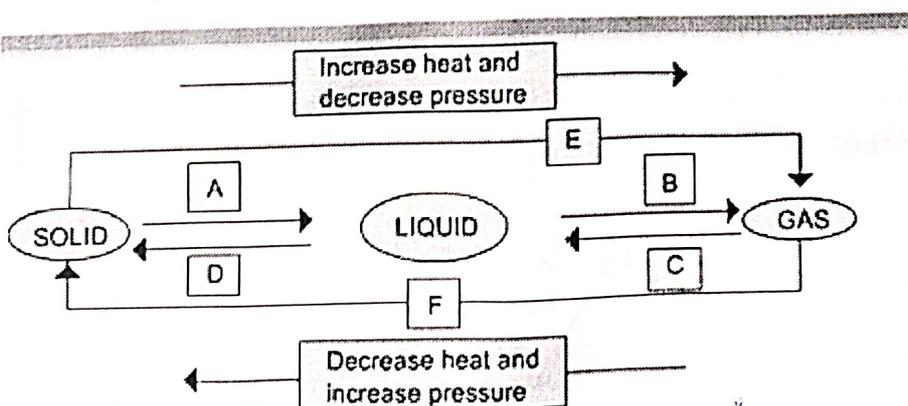
(A) What is the acceleration of the ball?
(B) What is the velocity of the ball at the bottom of the incline?

SECTION- C

27. Name A,B,C,D,E and F in the following diagram showing change in its state. — **3**

28. I. What is meant by the term chemical formula ? Write chemical formula of sulphuric acid. — **3**

II. Write number of electrons and protons in Mg and Mg^{2+}

III. What are polyatomic ions ? Give examples.

	Support your answer with suitable	3
30.	(A) Differentiate between chromatin, chromosome and gene.	
	(B) If we sprinkle salt on cucumber slices, after sometime they release water. Explain the mechanism responsible for this.	3
31.	Enlist points of differentiation between a bacterial cell and a human cheek cell. Draw suitable diagrams.	3
32.	Derive the Newton's second law of motion.	3
33.	An 8000 kg engine pulls a train of 5 wagons, each of 2000 kg, along a horizontal track. If the engine exerts a force of 40000 N and the track offers a friction force of 5000 N, then calculate: (A) the net accelerating force; (B) the acceleration of the train; and (C) the force of wagon 1 on wagon 2.	3

SECTION – D

34.	Answer the following
	  A. Why do solids have a regular geometrical shape?
	  B. Why are gases compressible but not liquids.
	  C. Can a rubber band change its shape on stretching? Is it a solid?
	  D. Why steam at 100°C is better for heating purposes than water at 100°C?
	  E. What do you understand by the term 'latent heat of fusion'? How much is the latent heat of fusion of ice?
	
	OR
	
	  A. How would you differentiate between a molecule of element and a molecule of compound ? Write one example of each type.
	  B. Write the chemical symbols of two elements:
	(a) Which are formed from the first letter of the elements' name ?
	(b) Whose names have been taken from the names of the elements in Latin ?
	(c) Which are formed from the first two letters of the elements' name ?
		5

35.	A) How does collenchyma tissue differs from sclerenchyma tissue? B) Draw a neat diagram of the section of the tissue responsible for translocation of food. Explain briefly about its components. **OR** What is a meristematic tissue? State its features and discuss its different types. Show their location in the plant body with the help of a diagram.	5
36.	A)A truck starts from rest and rolls down a hill with a constant acceleration. It travels a distance of 400 m in 20 s. Find its acceleration. Find the force acting on it if its mass is 7 tones B)Two objects of masses 100 g and 200 g are moving along the same line and direction with velocities of 2m/s and 1 m/s respectively. They collide and after the collision, the first object moves at a velocity of 1.67m/s. Determine the velocity of the second object. **OR** A) A stone is dropped from a 100m high tower. How long does it take to fall? a) the first 50m and b) the second 50m. B)Why do you fall in the forward direction when a moving bus brakes to a stop and fall backwards when it accelerates from rest?	5

37. Read the text carefully and answer the questions:
Everything in this universe is made up of material "matter". The air we breathe, the food we eat, stones, clouds, stars, plants and animals, even a small drop of water or a particle of sand – everything is matter. when we make tea, coffee or lemonade, particles of one type of matter get into the spaces between particles of the other. This shows that there is enough space between particles of matter. Particles of matter are continuously moving, that is, they possess what we call kinetic energy. particles of matter have a force acting between them. This force keeps the particles together. The strength of this force of attraction varies from one kind of matter to another.
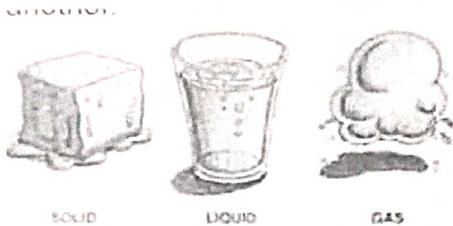
SOLID   LIQUID   GAS

    i.   Define matter? give some examples.
    ii.   Explain with activity that matter have space between them?
    iii.   How can we say that solid has the strongest intermolecular force?
    iv.   Which kind of matter have the largest intermolecular space between them?

38. Read the passage and answer the questions: 4
Leeuwenhoek discovered the free-living cells in pond water for the first time. Robert Brown discovered the nucleus in the cell. A single cell may constitute a whole organism as in Amoeba. These organisms are called unicellular organisms. On the other hand, many cells group together in a single body and assume different functions in it to form various body parts in multicellular organisms. The shape and size of cells are related to the specific function they perform. Each living cell has the capacity to perform certain basic functions that are characteristic of all living forms. Each kind of cell organelle performs a special function, such as making new material in the cell, clearing up the waste material from the cell and so on.

i)Cells were first discovered by:
a)Robert Hooke
b)Leeuwenhoek
c)Schleiden
d)Virchow

ii) Which of the following is a unicellular organism?
a)Plants
b)*Chlamydomonas*
c)Tiger
d)None of the above

iii)Who suggested that all cells arise from pre-existing cells?
a)Robert Hooke
b)Leeuwenhoek
c)Schleiden
d)Virchow

iv) Which of the following is an incorrect statement?

(I) Each living cell has the capacity to perform certain basic functions.
(II) There is a division of labour in multicellular organisms.
(III) Each kind of cell organelle performs a special function.
(IV) All activities inside the cell do not interact with the environment.

a) (I) and (II)
b) (II) and (III)
c) (III) and (IV)
d) Only (IV)

39. **Read the text carefully and answer any four questions:**   4
Graphical representation of the distance-time graph of moving body at a uniform
speed. when an object travels equal distances in equal intervals of time, it moves with
uniform speed.
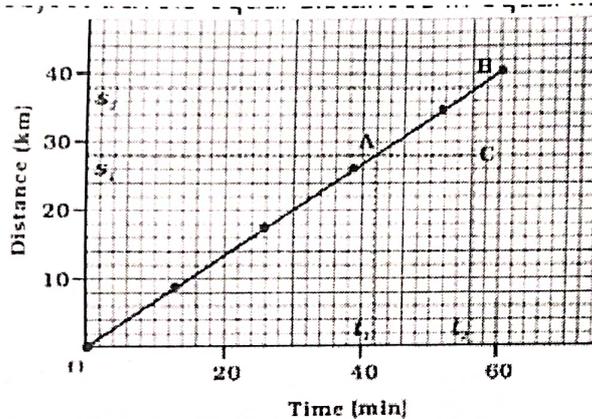
i.   Which of the following statement is incorrect about the graphical
      representation of motion?
 I.   A straight line graph helps in solving a linear equation
 II. Line graphs show the dependence of one physical quantity
 III. In the distance-time graph, time is taken along the y–axis
 IV. In the distance-time graph, distance is taken along the x-axis
      a) (III) and (IV)
      b) (II) and (III)
      c) (II) and (IV)
      d) (I) and (II)

ii.   The area under a speed-time graph represents a physical quantity which has the
      unit of :
      a) ms^{-1}
      b) ms^{-2}
      c) ms^2
      d) m

iii. A bus moving along a straight line at 20m/s undergoes an acceleration of 4 m/s²
      . After 2 seconds, its speed will be :
      a) 28 m/s
      b) 8 m/s
      c) 16 m/s
      d) 12 m/s

iv.   A student draws a distance-time graph for a moving scooter and finds that a
      section of the graph is a horizontal line parallel to the time axis. Which of the
      following conclusion is correct about this section of the graph?
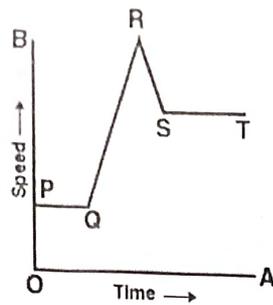
a) The distance travelled by scooter is the maximum in this section
b) The distance travelled by scooter is zero in this section
c) The distance travelled by scooter is the minimum in this section
d) The scooter has uniform speed in this section

v. What conclusion can you draw about the speed of a body from the following distance-time graph?
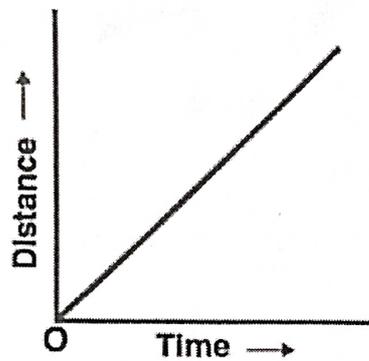
a) Uniform speed
b) Uniform velocity
c) Non-uniform speed
d) Non-uniform velocity

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