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INDIAN SCHOOL SALALAH

FIRST TERM EXAMINATION – SEPTEMBER 2025

SCIENCE – Code No. 086

Class: IX **Date: 22 / 09 / 2025**

Time: 3 hours **Maximum Marks: 80**

General Instructions:

a. **This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.**
b. **All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.**

SECTION A- BIOLOGY

1 Which component of the cell is likely to become more abundant when the cell requires more energy? **1**

A) Golgi bodies
B) Mitochondria
C) Lysosomes
D) Nucleus

2 Which of the following tissues is dead at maturity? **1**

A) Collenchyma
B) Parenchyma
C) Sclerenchyma
D) Phloem

3 Find the mismatched pair: **1**

A) Rough ER – Has ribosomes on its surface
B) Smooth ER – Lipid synthesis
C) Golgi apparatus – Energy production
D) Lysosomes – Contain digestive enzymes

4 A plant is growing in a windy area. Which tissue would be more developed in its stems to provide flexibility and prevent breakage? **1**

A) Parenchyma

B) Sclerenchyma

C) Collenchyma

D) Xylem

5 A cell has single chromosome and no membrane-bound organelles. It is most likely a: **1**

A) Plant cell

B) Animal cell

C) Fungal cell

D) Bacterial cell

6 In aquatic plants, which type of parenchyma helps in buoyancy? **1**

A) Aerenchyma

B) Collenchyma

C) Xylem parenchyma

D) Chlorenchyma

The following one question consists of two statements – **Assertion** (A) and **Reason** (R). Answer this question 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.

7 **Assertion (A):** Cell is the structural and functional unit of life. **1**

Reason (R): Unicellular organisms are capable of independent existence.

8 **Assertion (A):** Parenchyma cells cannot perform photosynthesis. **1**

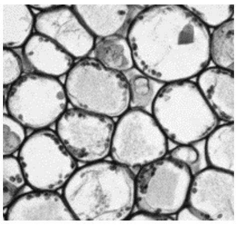
Reason (R): Parenchyma cells in leaves contain chloroplasts.

9 During an experiment, a plant cell's content shrinks, but the cell wall remains intact. **2**

a) What is this process?

b) Why does it happen?

10 **2**



a) Identify the simple permanent tissue.

b) State its function.

11 a) Why is epidermis important for plants? **2**

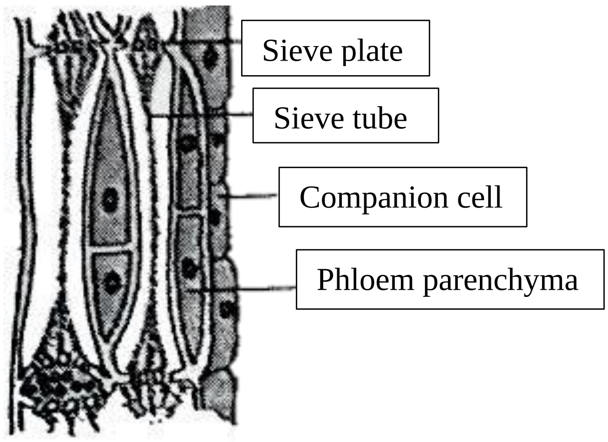
b) What is cutin?

12 a) Complete the table by identifying the missing components: **3**

Experiment	**Water Movement Direction**	**Type of Solution**	**Effect on Cell**
A	Into the cell	-------------------	Swelling
B	-----------------------------	Hypertonic	-----------------
C	No movement	Isotonic	---------------

b) Why is the rigid cell wall considered an advantage for plants in terms of water absorption, unlike animal cells?

13 Priya, a high school student, was asked to draw and label a diagram of Complex plant tissue for her biology assignment. She completed the diagram and submitted it to her teacher. However, upon review, the teacher noticed that although the drawing was mostly correct, some of the labels were misplaced or incorrect. **4**



A (i) Redraw the diagram with correct labelling.

(ii) Identify the plant tissue.

B State the function of Phloem parenchyma

C(I) **<u>Attempt either option (I) or (II).</u>**

a) Identify the living and dead cells among these components.

b) Why are these tissues considered as Complex tissues?

OR

C(II) a) What is Cork?

b) Why are cork cells impermeable to water and gases?

14(I) **<u>Attempt either option (I) or (II).</u>** **5**

a) Draw a neat- labelled diagram of a Bacterial cell.

b) Write any two similarities between bacterial cell and plant cell.

c) What are chromosomes?

OR

14(II) a) State any two points of difference between Prokaryotic cell and Eukaryotic cell.

b) Draw the diagram of Plant cell and label the following parts: Vacuole, cell wall, nucleus and mitochondria

SECTION B - CHEMISTRY

15 The property of gases which makes it possible to fill large volume of gases in small cylinders. **1**

A) Fluidity

B) Density

C) Rigidity

D) Compressibility

16 The intermixing of particles of two or more different substances on their own is known as **1**

A) Displacement

B) Diffusion

C) Deposition

D) Ductility

17 The only non-metal that exists in liquid form at room temperature is **1**

A) Mercury

B) Iodine

C) Sodium

D) Bromine

18 A colloid is a ---------mixture and its components can be separated by the technique known as --------------------- **1**

A) Homogeneous, Filtration

B) Heterogeneous, Filtration

C) Heterogeneous, Centrifugation

D) Homogeneous, Centrifugation

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19 **Assertion (A):** Boron, Silicon and Germanium are called Metalloids. **1**

Reason (R): These elements have intermediate properties between those of metals and non-metals.

20 What is meant by Sublimation? Name any two sublimable substances. **2**

21 a) Two students "A" and "B" were given 10 ml of water in a bowl and a plate respectively. They were told to observe the rate of evaporation. Name the student whose water evaporates faster and explain its reason. **2**

Student A

Student B

b) How do humidity and wind speed affect the rate of evaporation?

22 a) List any three characteristics of particles of matter. **3**

b) Convert the following temperatures into Celsius scale: -

(i) 293 K (ii) 573K (iii) 470 K

23 a) Complete the following table: - **3**

Type of solution	Solute	Solvent
Soda water	a. ------------	b. -------------
Tincture of Iodine	c. -----------	d. -------------

b) Amit crushed a piece of chalk and mixed the chalk powder in 100ml water. The water appeared white and cloudy. After sometime the particles settled at the bottom of the container. Identify the type of mixture. Justify your answer.

24 a) A solution of alcohol in water has been prepared by mixing 150ml of alcohol with 600 ml of water. Calculate the volume percentage of the solution? **3**

b) What are alloys and why are they considered as mixtures?

25 On increasing the temperature of solids, the kinetic energy of particles increases and they vibrate with a greater speed. The particles leave their positions and start moving freely. Boiling occurs when the particles in a liquid state absorb enough energy to overcome the forces holding them together and begin to move apart to form a gas. **4**

A Define Latent heat of vaporization.

B What produces more severe burns, boiling water or steam? Why?

C(I) **Attempt either option (I) or (II).**

Distinguish between Evaporation and Boiling. Write any two points of differences.

OR

C(II) What is Melting point? The melting points of three substances A, B and C are 52℃, 175℃ and 80℃. Arrange them in the decreasing order of inter particle force pf attraction. Give reason for your answer

26(I) **<u>Attempt either option (I) or (II).</u>** **5**

A student was given a mixture of Iron filings and Sulphur. He was told to heat it and observe the compound.

a) Write the effect of magnet on the compound.

b) Write the action of carbon disulphide on it.

c) Identify the gas evolved when dilute hydrochloric acid is added to the compound formed. Mention any property of the gas evolved.

d) List any three differences between Physical and Chemical changes.

OR

26(II) a) Describe the physical properties of metals such as Malleability, Ductility, conductivity and Sonority and name two elements that can melt at temperature slightly above room temperature.

b) Define Tyndall effect. Explain why copper sulphate solution does not show Tyndall effect but milk shows.

SECTION C - PHYSICS

27 A ball is gently dropped from a height of 20 m. If its velocity increases uniformly at the rate of 10 m/s^2, with what velocity will it strike the ground? **1**

A) 40 m/s

B) 20 m/s

C) 15 m/s

D) 10 m/s

28 A cyclist does not come to rest immediately after he stops pedaling due to the **1**

A) Inertia of rest

B) Inertia of motion

C) Inertia of direction

D) None of these

29 A truck of mass 2000 kg moving at 90 km/h suddenly slows down to 72 km/h. The magnitude of change in momentum is **1**

A) 20000 kgm/s

B) 36000 kgm/s

C) 30000 kgm/s

D) 10000 kgm/s

30 A car moves with a constant speed around a circular track. This means: **1**

A) No force acts on the car

B) Acceleration is zero

C) The car has constant velocity

D) The car has acceleration

31 If the distance between two objects is doubled, the gravitational force becomes **1**

A) 4 times greater

B) Half

C) One-fourth

D) Remains the same

32 If the distance- time graph of a body is parallel to the time axis, the body is **1**

A) Accelerating

B) Retarding

C) At rest

D) None of these

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33 **Assertion (A):** A stone and a feather dropped in a vacuum fall at the same rate. **1**

Reason (R): In the absence of air resistance, all objects fall with the same acceleration due to gravity.

34 The table below shows the mass and weight of the same object on Earth and the moon **2**

Objects	Mass (kg)	Weight (N)
Earth	5	49
Moon	5	8.2

a) Why is the weight of the object on the Moon less than on Earth, even though its mass remains the same?

b) Calculate the acceleration due to gravity (g) in the first case using the above data.

35 a) Give reasons **3**

i) A cricketer moves his arms backwards in the direction of ball while taking a catch,

ii) A gun recoils when a shot is fired from it.

b) Define momentum. Which will have more momentum, if a cricket ball and a tennis ball are thrown with the same speed. Why?

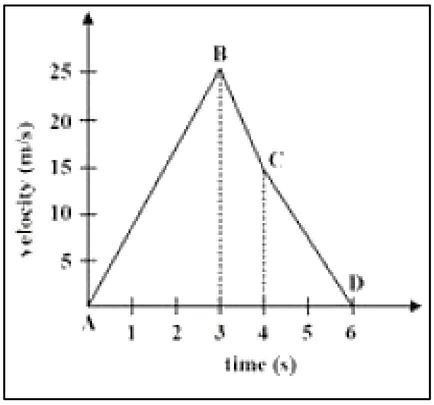
36 a) An object has moved through a distance. Can it have zero displacement? Support your answer with an example. **3**

b) A bus starting from rest moves with a uniform acceleration of $0.1 m/s^2$ for 2 minutes, Find i) the speed acquired ii) the distance travelled.

37 a) Derive an expression for acceleration due to gravity. **3**

b) Explain why the value of 'g' changes from poles to equator on the surface of the earth.

38 Hima is a high school student conducting an experiment in her physics lab to study the motion of a toy car. She sets the car in motion and records its velocity at regular intervals. After plotting the data, she obtains the following velocity-time graph. **4**



A Calculate the acceleration from A to B.

B Calculate the retardation from B to C.

C(I) **<u>Attempt either option (I) or (II).</u>**

Find the total distance travelled by the body from A to D

OR

C(II) If the car moves in a circular path of radius 2R, what will be the distance covered and displacement of the car after 2 complete rounds?

39(I) **<u>Attempt either option (I) or (II).</u>** **5**

a) State Newton's second law of motion. Using this law derive the mathematical formula for force.

b) A body of mass 500g is resting on a frictionless table. Calculate the acceleration of the body when acted upon by a force of 0.01 N

OR

39(II) a) When a piece of paper is placed under a pile of books and pulled out suddenly, the pile of books remains nearly undisturbed. Explain this observation with the help of Newton's First Law of Motion and state the law.

b) On what factor does the inertia of a body depend? Explain with the help of a suitable example.

c) Deduce Newton's first law of motion from second law of motion.

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