Roll No. | | | | | |

INDIAN SCHOOL SALALAH

FIRST TERM EXAMINATION – SEPTEMBER 2025

SCIENCE – Code No. 086

Class: X **Date: 28-09-2025**

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

1 Secretion of less saliva in mouth will affect the conversion of: **1**

A) Proteins into amino acids

B) Fats into fatty acids and glycerol

C) Starch into simple sugars

D) Sugars into alcohol

2 Observe the given figure. When the plant is touched, its leaves fold. This is due to: **1**

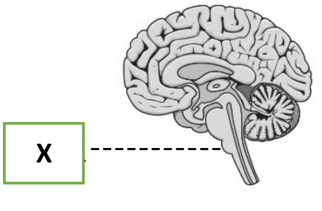
A) Hormonal effect

B) Thermal effect

C) Change in amount of water in cells

D) Electromagnetic effect

3 **1**



Which among the following is not a neural action controlled by the part of human brain labelled 'X' in the figure above?

A) Salivation

B) Hunger

C) Vomiting

D) Blood pressure

4 When a pure tall pea plant is crossed with pure dwarf pea plant, the percentage of tall plants in the F1 and F2 generation pea plant will be respectively: **1**

A) 100% ; 25%

B) 100% ; 50%

C) 100% ; 75%

D) 100% ; 100%

5 During which of the following stages of the circulation of blood in a normal human being, the oxygenated blood is pumped to all parts of the body? **1**

A) Contraction of the left atrium

B) Contraction of left ventricle

C) Relaxation of the right atrium

D) Relaxation of the right ventricle

6 The plant hormone present in greater concentration in the areas of rapidly dividing cells is : **1**

A) Auxin

B) Cytokinins

C) Gibberellins

D) Abscisic acid

7 Mendel obtained F2 generation by: **1**

A) Self-pollinating F1 generation plants

B) Cross pollinating F1 generation with plants having dominant traits.

C) Cross pollinating F1 generation plants with plants having recessive traits.

D) Cross pollinating both the parents

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.

8 **Assertion (A):** In the case of single-celled organisms, there are no specific organs for taking in food, exchange of gases, or removal of wastes. **1**

Reason (R): Single-celled organisms can perform these functions through their cell membrane.

9 **Assertion (A):** Our body does not maintain blood sugar level. **1**

Reason (R): Pancreas secretes insulin which help to regulate blood sugar levels in the body.

10 (a) Name the plant hormone, which is synthesized at the shoot tip. **2**

(b) How does this hormone help the plants to bend towards light? Explain with help of a diagram.

11 **<u>Attempt either option A or B</u>**. **2**

A. The breakdown of glucose has taken the following pathway:

$$\text{Glucose} \xrightarrow{(a)} \text{Pyruvate + Energy} \xrightarrow{(b)} \text{Lactic acid + Energy}$$

(a) Name the sites (a) and (b).

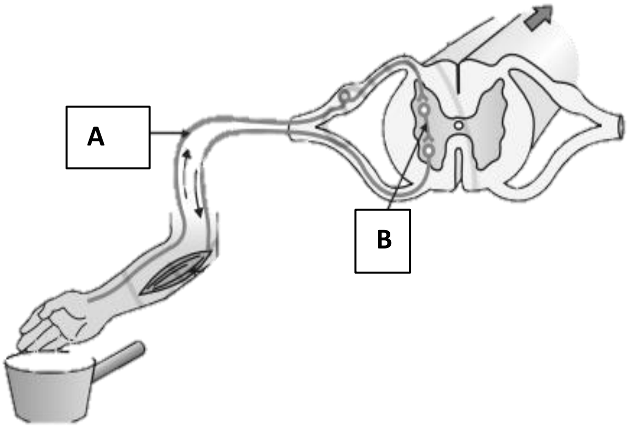
(b) Identify the process.

OR

B. (a) Write the equation for Aerobic respiration.

(b) Why is the rate of breathing faster in aquatic animals faster than that in terrestrial animals?

12 **2**



(a) Name and define the process.

(b) What is the role of A and B.

13 In a monohybrid cross between two pea plants with yellow seeds (YY) and green seeds (yy), what is the expected phenotypic ratio and genotype ratio of the offspring in the F2 generation? (Using the Punnett square method to find the F2 generation.) **3**

14 (a) Draw the diagram of the human excretory system and label: Renal artery and Urethra **3**

(b) Where does reabsorption take place in the nephron?

(c) Why is reabsorption important in the nephron?

15 **Study the table below showing the average hormone levels in the blood of five individuals and their possible effects. Answer the questions that follow.** **4**

Individual	Insulin (μU/mL)	Thyroxine (μg/dL)	Adrenaline (ng/mL)	Observed Condition
A	8	6.5	0.3	Normal
B	2	6.2	0.4	High blood sugar
C	10	2.0	0.3	Slow metabolism
D	7	6.4	1.2	Increased heart rate, sweating
E	6	12.5	0.3	Weight loss, anxiety

Attempt either subpart A or B

A Which individual is likely suffering from diabetes? Explain your answer based on the hormone level.

OR

B Which individual shows symptoms of stress or fear response? What hormone is responsible?

C Individual C has low thyroxine levels. Name the components whose metabolism may be disturbed.

D What does it imply when we say Individual E is affected by hyperthyroidism?

16 **Attempt either option A or B.** **5**

A (a)Name the blood vessel that brings

(i)Oxygenated blood to the heart (ii) deoxygenated blood to the heart.

(b) Which chamber in the heart receives deoxygenated blood?

(c) How is this deoxygenated blood sent to lungs for oxygenation?

(d) What is the function of valves that are present between the heart chambers?

(e) Why is the ventricle thicker than the atria?

(f) How is the loss of blood in our body minimized?

OR

B (a)Complete the table below:

Digestive Gland	Secretions	Function
___(i)_______	HCl, Pepsin Mucus	________(ii)_________ Digestion of Protein _______(iii)_
Liver	_____(iv)_________	Emulsifies fats for easier digestion

(b) Name two enzymes secreted by the pancreas.

(c) Describe how the inner walls of the small intestine are adapted for absorption of nutrients.

(d)Which part of the alimentary canal is larger in herbivores animal than in carnivores? Why?

SECTION B

17 Calcium oxide reacts vigorously with water to produce slaked lime. **1**

$$CaO_{(s)} + H_2O_{(l)} \rightarrow Ca(OH)_{2\,(aq)}$$

This reaction can be classified as

(i) Combination reaction (ii) Exothermic reaction

(iii) Endothermic reaction (iv) Oxidation reaction

Which of the following is a correct option?

A) (i) and (ii)

B) (iii) and (iv)

C) (i), (iii) and (iv)

D) (i) and (iii)

18 Study the following table and choose the correct option: **1**

	Salt	Parent Base	Parent Acid	Nature of Salt
A)	Sodium Chloride	NaOH	HCl	Basic
B)	Sodium Carbonate	NaOH	H_2CO_3	Neutral
C)	Sodium Sulphate	NaOH	H_2SO_4	Acidic
D)	Sodium Acetate	NaOH	CH_3COOH	Basic

19 Amphoteric oxides are compounds that can react with both acids and bases. Which of the following is an example of an amphoteric oxide? **1**

A) Sodium oxide (Na_2O)

B) Calcium oxide (CaO)

C) Aluminum oxide (Al_2O_3)

D) Magnesium oxide (MgO)

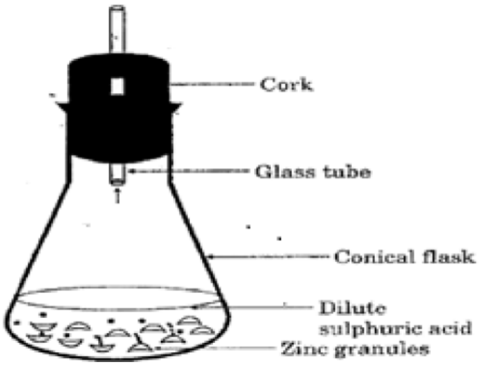
20 What is observed when dilute H_2SO_4 is added to zinc granules taken in a conical flask? **1**

A) No change takes place.

B) The colour of the solution becomes yellow.

C) A pungent smelling gas gets liberated.

D) Small bubbles of H_2 gas appear on the surface of zinc granules.



21 An alloy of lead and tin, has a low melting point and is used for welding. **1**

A) Brass

B) Amalgam

C) Solder

D) Bronze

22 Which of the following salts do not have the water of crystallization? **1**

(i) Gypsum (ii) Bleaching Powder

(iii) Plaster of Paris (iv) Blue vitriol

Choose the correct option:

A) Only (ii)

B) (ii) and (iv)

C) (i), (iii) and (iv)

D) Only (iv)

23 Copper objects lose their shine and form green coating on its surface on exposure to air. The chemical substance in the green coating is **1**

A) Copper oxide (CuO)

B) Copper hydroxide and Copper oxide ($Cu(OH)_2.CuO$)

C) Basic Copper carbonate ($CuCO_3.Cu(OH)_2$)

D) Copper sulphate ($CuSO_4$)

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.

24 **Assertion(A):** The process of dissolving an acid or a base in water is highly exothermic reaction. **1**

Reason(R): Water must always be added slowly to acid with constant stirring.

25 When a solution of potassium iodide is added to a solution of lead nitrate. What change in colour will you observe? Name the type of reaction. Write a balanced chemical equation to represent the above chemical reaction. **2**

26 **<u>Attempt either option A or B.</u>** **3**

A (a) What method is used to extract metals of high reactivity?

(b) Name the main ore of mercury. How is mercury obtained from its ore? Write the balanced chemical equations.

OR

B Two ores X and Y were taken. On heating these ores, it was observed that-

(a) ore X gives CO_2 gas, and

(b) ore Y gives SO_2 gas.

Write steps to convert these ores into metals, giving chemical equations of the reactions that take place.

27 (a) An element 'M' with electronic configuration 2, 8, 8, 2 combined with chlorine. Show the formation of the compound formed. **3**

(b) How will the electrical conductivity of the compounds formed vary with respect to 'M'?

28 Redox reactions are those reactions in which oxidation and reduction occur simultaneously. A redox reaction is made up of two half reactions. In the first half reaction, oxidation takes place and in the second half reaction, reduction occurs. Oxidation is a process in which a substance loses electrons and in reduction, a substance gains electrons. The substance, which gains electrons, is reduced and acts as an oxidising agent. On the other hand, a substance, which loses electrons, is oxidised and acts as a reducing agent. **4**

A In the following reaction, which substance is reduced?

$MnO_2 (s) + Al (s) \longrightarrow Mn (l) + Al_2O_3(s) + Heat$

B For the given reaction, identify the oxidising agent and reducing agent.

$CuO + Mg \longrightarrow MgO + Cu$

OR

Define oxidation and reduction in terms of oxygen and hydrogen.

C What are the effects of oxidation reactions in everyday life? (any two)

29 **<u>Attempt either option A or B.</u>** **5**

A (i)What is baking soda chemically called? Write the reaction involved in its preparation.

(ii)Write the name of a white powder, which is added while baking bread and cakes to make them soft and fluffy? Name its main ingredient. Explain the function of each ingredient.

(iii) Write the chemical reaction taking place when white powder is heated during baking.

OR

B You have five solutions A, B, C, D and E showing pH as 4.8, 7, 12, 1 and 9 respectively.

(i) What is the name of the indicator, which can be used for testing the pH of a solution?

(ii) Which solution has the lowest concentration of OH^- ions?

(iii) Identify the most acidic and most basic solutions.

(iv) State the nature and the change in colour of pH paper on dipping in solution B.

(v) Arrange the above solutions in the increasing order of H^+ ion concentration.

SECTION C

30 A beam of light passes through a glass slab and emerges parallel to the incident ray. This is because: **1**

A) Angle of incidence equals angle of emergence

B) The lateral displacement is zero

C) The refractive index of glass is 1

D) Light does not refract in glass

31 The least resistance obtained by connecting 2 Ω, 4 Ω, 1 Ω and 100 Ω resistors in parallel is **1**

A) Greater than 100 Ω

B) Greater than 4 Ω

C) Less than 1 Ω

D) Greater than 2 Ω

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.

32 **Assertion (A):** A convex lens is used to correct hypermetropia. **1**

Reason (R): In hypermetropia, the image of near objects is formed behind the retina.

33 What does an electric circuit mean? Name a device that helps to maintain a potential difference across a conductor in a circuit. When do we say that the potential difference across a conductor is 1volt? **2**

34 **<u>Attempt either option A or B</u>** **2**

A In an electrical circuit comprising a resistor made up of a metallic wire the ammeter reads 100mA. If the length of the wire is stretched to double how will the current in the circuit change? Justify your answer

OR

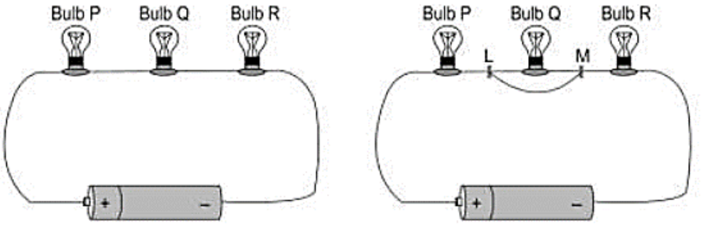
B What is electrical resistivity? Derive its SI unit. What are the factors that resistivity depends on?

35 (a)State the laws of refraction of light. Explain the term absolute refractive index of a medium and write an expression to relate it with the speed of light in vacuum. **3**

(b) For the same angle of incidence (in the rarer medium) the angle of refraction in two transparent media I and II is 20^0 and 30^0 respectively. Out of I and II, which medium is optically denser and why?

36 (a) Vijaya connects three bulbs P, Q and R in series with a battery in two different ways using identical conducting wires as shown below. She notices that in case I all three bulbs **3**

glow but in case II only the bulbs P and R continue to glow. What could be the reason for the bulb Q to not glow in case II? Explain.



(b) Two resistances when connected in parallel give a combined resistance of 10/3 ohm. When the same two resistors are connected in series, the combined resistance becomes 15 ohm. Calculate the individual resistance of each resistor.

37 (a) Explain the term "power of accommodation" of the eye. What happens to it as we age? **3**

(b) Why can a person with myopia see nearby objects clearly but not distant ones?

(c) How is this defect corrected? Draw a diagram to support your answer.

38 In a science exhibition, a student showed a working model where white light was passed through a glass prism and a band of seven colours was seen on the screen. She explained that this is similar to the formation of a rainbow. **4**

A Why does white light split into seven colours when passed through a prism?

B Why doesn't this splitting happen with a glass slab?

<u>Attempt either option C or D.</u>

C What phenomenon is being demonstrated here? Define it.

OR

D How is this related to the natural phenomenon of a rainbow?

39 **<u>Attempt either option A or B.</u>** **5**

A A student wants to form a real and inverted image of an object using a concave mirror on a screen. The object is 5 cm tall and placed 40 cm from the mirror. The mirror's focal length is 15 cm.

a) Find the image distance.

b) Draw a labelled ray diagram showing the image formation.

c) If the object is moved 20 cm towards the mirror, where will the image be formed? Draw a ray diagram to support your answer.

OR

B An object is placed 30 cm in front of a concave lens and the image is formed 10 cm from the lens on the same side as the object.

a) Find the focal length of the lens.

b) Is the image real or virtual? Justify your answer.

c) Draw a ray diagram showing the image formation.

d) If the object moves away from the lens, how does the image move?