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INDIAN SCHOOL SALALAH
FIRST TERM EXAMINATION - SEPTEMBER 2026



SCIENCE (086)

Class: X

Date: 10/09/26

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 If pea plants with round and green seeds (RRyy) are crossed with pea plants having wrinkled and yellow seeds (rrYY), the seeds developed by the plants of F₁ generation will be: 1
(A) 50% round and green (B) 75% wrinkled and green
(C) 100% round and yellow (D) 75% wrinkled and yellow
- 3 Plants use completely different process for excretion as compared to animals. Which one of the following processes is **NOT** followed by plants for excretion? 1
(A) They can get rid of excess water by transpiration.
(B) They selectively filter toxic substances through their leaves.
(C) Waste products are stored as resins and gums in old xylem.
(D) They excrete waste substances into the soil around them.
- 4 Which part of the neuron carries nerve impulses away from the cell body? 1
(A) Dendrite (B) Axon (C) Nucleus (D) Cell body
- 5 In a neuron, conversion of electrical signal to a chemical signal occurs at/in 1
(A) cell body (B) axon (C) dendritic end (D) axonal end

6 After our nose senses a smell, which option shows the mechanism of the travelling of sense in our body? 1

- (A) olfactory receptors- dendritic tip of a nerve cell- cell body - axon- nerve ending
- (B) olfactory receptors- dendritic tip of a nerve cell- axon- cell body- nerve ending
- (C) gustatory receptors- dendritic tip of a nerve cell- cell body- axon- nerve ending
- (D) gustatory receptors- dendritic tip of a nerve cell- axon- cell body- nerve ending

7 Which of the following is a recessive trait in pea plants? 1

- (A) Round seeds (B) Yellow seeds (C) Wrinkled seeds (D) Tall stem

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):** The exchange of gases in human lungs takes place through the walls of the alveoli. 1

Reason (R): Alveoli are surrounded by a network of blood capillaries and have thin, moist walls, providing a large surface area for efficient diffusion of gases.

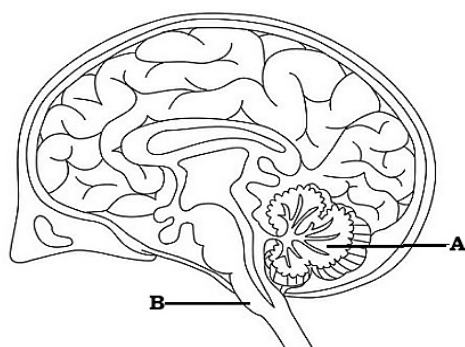
9 **Assertion (A):** The structure of a neuron is specialized to receive and transmit electrical impulses. 1

Reason (R): A neuron has an axon to receive signals, a cell body to maintain the cell, and dendrites to conduct nerve impulses away from the cell body.

10 Differentiate between aerobic and anaerobic respiration on the basis of: 2

a) Requirement of oxygen b) Amount of energy released

11 Identify the labelled parts of the brain and write its function: 2



12 “Sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it “. Justify the statement with the help of a flow chart showing sex determination in human beings. 2

- 13 (A) Draw a diagram to show open stomatal pore and label on it: 3
 (i) Guard cell (ii) Chloroplast
 (B) State the role of guard cells.
 (C) Which gas is taken in through stomata during photosynthesis?
- 14 During a school laboratory activity, Arjun accidentally touches a heated metal 3
 stand. He immediately pulls his hand away. A few seconds later, he feels the pain
 and realizes that the metal stand was hot.
 (a) What type of response did Arjun show when he immediately pulled his hand
 away?
 (b) Name the pathway through which the nerve impulse travelled to produce this
 quick response.
 (c) Arrange the following in the correct sequence:
 Motor neuron, receptor, spinal cord, sensory neuron, muscle
 (d) Why was Arjun able to withdraw his hand before he consciously felt the pain?
- 15 In a cross between a pea plant with violet flowers (VV) and a pea plant with white 4
 flowers (vv). Make a cross and answer the following questions:
 A. If the F_1 plants are self-pollinated, what will be the genotypic ratio in the F_2
 generation?
 B. Name this type of cross, involving a single trait.

Attempt either subpart C or D

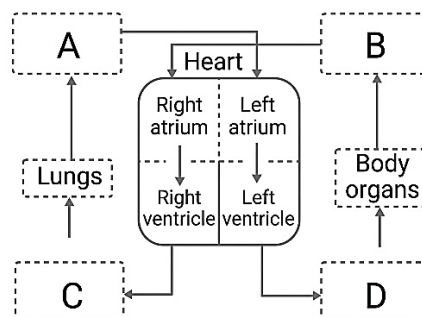
- C. If there are 400 flowers in F_1 generation, how many of them will be violet in
 colour. Why?

OR

- D. If there are 800 flowers in F_2 generation then find out how many will be Violet
 and white?

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

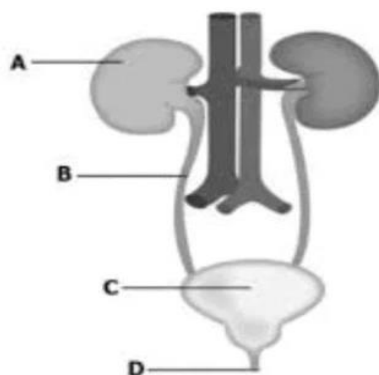
- A Observe the diagram and answer the following questions:



- Identify blood vessels A, B, C, D.
- What type of blood is carried by A and B?
- Why is the right side of the human heart separated from the left side? How does this separation help the organism? Mention two points.

OR

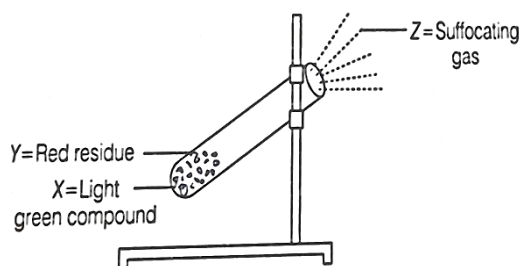
B Observe the diagram and answer the following questions:



- Label the parts A, B, C, D and write one function for each.
- Name the filtrational units in kidney. Write its function.
- Write one similarity between filtrational unit in kidney and alveoli in lungs.

SECTION B

- 17 A mixture of two gases 'Z' having suffocating odour are obtained when a green solid 'X' is heated, along with residue 'Y'. These gases are major air pollutants. 1



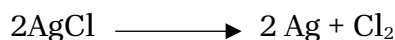
Here X, Y, Z would be

- | | |
|---|---|
| (A) $\text{Pb}(\text{NO})_3$, PbO_2 , $\text{NO}_2 + \text{NO}$ | (B) $\text{Fe}(\text{OH})_2$, FeO , $\text{H}_2\text{O} + \text{H}_2\text{O}_2$ |
| (C) FeSO_4 , Fe_2O_3 , $\text{SO}_2 + \text{SO}_3$ | (D) PbSO_4 , Pb_2O_3 , $\text{SO}_2 + \text{SO}_3$ |

- 18 When aqueous solutions of barium chloride and sodium sulphate react together, 1
an insoluble substance along with aqueous solution of sodium chloride is formed.
This reaction is an example of a

- | | |
|---------------------------|----------------------------------|
| (A) Combination reaction | (B) Decomposition reaction |
| (C) Displacement reaction | (D) Double displacement reaction |

19 Four statements about decomposition reaction are listed. 1



- i. Silver chloride undergoes photochemical decomposition
- ii. Grey silver chloride turns white in the presence of sunlight
- iii. White silver chloride turns grey in the presence of sunlight
- iv. This reaction is used in the black and white photography

Which statements are correct?

- (A) i, ii, iii (B) i, iii, iv (C) iii, iv (D) i, ii

20 An aqueous solution 'A' turns phenolphthalein solution pink. On addition of an aqueous solution 'B' to 'A', the pink colour disappears. Which of the following statement is true for solution 'A' and 'B'? 1

- (A) A is strongly basic and B is a weak base.
(B) A is strongly acidic and B is a weak acid
(C) A has p^H greater than 7 and B has p^H less than 7
(D) A has p^H less than 7 and B has p^H greater than 7.

21 Which of the following is true when HCl gas is passed through water? 1

- (A) It forms hydronium ion in the solution due to the combination of hydrogen ion with water molecules
(B) It ionizes to form OH^- and Cl^- ions.
(C) It gives both hydrogen and hydroxyl ions in the solution.
(D) It does not ionize in the solution

22 Which of the following metals does not react with cold water? 1

- (A) Sodium (B) Magnesium (C) Potassium (D) Calcium

23 A metal 'M' displaces iron from aqueous solution of ferrous sulphate but fails to do so in case of aqueous solution of aluminium sulphate. The metal M is 1

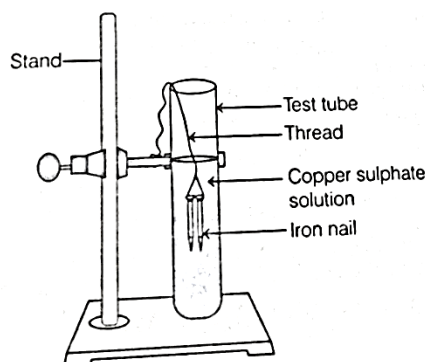
- (A) Magnesium (B) Copper (C) Lead (D) Zinc

The following one question consists of two statements – **Assertion** (A) and **Reason** (R). Answer this question by selecting the appropriate option given below:

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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:** Sodium hydroxide reacts with zinc to produce hydrogen gas. 1

Reason: Acids react with active metals to produce hydrogen gas.



Observe the experimental setup shown in the diagram and answer the following.

- Define the type of reaction in the above.
- List two other metals which can be used in place of iron to show the same type of reaction with copper (II) chloride solution.

26

3

Attempt either option I or II.

I (A) When two metals namely sodium and magnesium are heated directly, one by one, on the flame of a burner, they impart different colors to the flame.

- Name the color imparted by sodium metal and magnesium metal.
- Are the compounds formed after burning above metals soluble in organic solvents such as kerosene and petrol? Justify your answer.

(B) What is reactivity series? Arrange the metals Al, Ag, Ca, Zn in increasing order of their reactivities.

OR

II (A) Why do ionic compounds have high melting points?

(B) Define the following terms

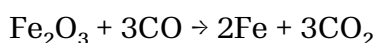
- Ore
- Gangue

(C) Name two metals which are comparatively poor conductors of heat.

27 (A) A substance X, is used intensively in the cement industry. The metal present in 3

X is present in bones also. X on treatment with water, it forms a solution which turns red litmus into blue. Identify the substance X and also write the chemical equation of reaction with water.

(B) In the reaction represented by the following equation.



- Name the substance which gets oxidized.
- Name the substance which gets reduced.
- Name the oxidizing agent.

28 Metals are required for a variety of purposes. For this, we need their extraction 4
from their ores. Ores mined from the earth are usually contaminated with many
impurities, which must be removed prior to the extraction of metals. The extraction
of pure metal involves the following steps.

1. Concentration of ore

2. Extraction of metal from the concentrated ore

3. Refining of the metal

A. Name an ore of mercury, write its formula.

B. What happens to zinc carbonate when it is heated strongly in presence of
limited air?

Attempt either option C or D.

C. The reaction of metal A with Fe_2O_3 is highly exothermic and used to join railway
tracks.

i) Identify the metal A and name the reaction taking place.

ii) Write the chemical equation for the reaction of metal A with Fe_2O_3 .

OR

D. We cannot use carbon to obtain sodium from sodium oxide. Why? State the
reactions taking place at cathode and anode during electrolytic reduction of
sodium chloride.

29 5

Attempt either option I or II.

I. (A) Consider the following salts.

(i). YCl (ii). NH_4X (iii). ZCO_3 .

(a) What would be the pH of the salt solution if in YCl , Y is sodium?

(b) If in salt NH_4X , if X is nitrate, then its solution will give what color with
universal indicator?

(c) What would be the colour change if ZCO_3 is added to blue litmus
solution, if Z is potassium metal?

(B) While diluting an acid, it is recommended that the acid should be added to
water. Why? Give reason.

(C) Do basic solutions also have H^+ ions? If yes, then why are they basic?

(D) Define a universal indicator.

(E) A metal M on reacting with dilute acid liberates a gas G. The same metal M
also liberates gas G when reacts with a base. Write the name of gas G and
metal M.

OR

II. (A) A substance X which is prepared from gypsum has the property of hardening when mixed with a proper quantity of water.

- (a) Identify the substance X.
- (b) Write the chemical equation for its preparation.
- (c) For what purpose is it used in hospitals?

(B) Consider the following salts:

Na_2CO_3 , NaCl , NH_4Cl , CH_3COONa , K_2SO_4 , $(\text{NH}_4)_2\text{SO}_4$

Which of these salts will give

- (a) acidic solutions,
- (b) neutral solutions?

(C) A student took a small amount of copper(II) oxide in a conical flask and added dilute hydrochloric acid to it with constant stirring. He observed a change in the color of a solution. Write the name of the compound formed and colour of the solution.

SECTION C

30 When white light travels through air, which of the following statements is correct? 1

- (A) Red light travels faster than violet light.
- (B) Violet light travels faster than red light.
- (C) All colours of white light travel with the same speed.
- (D) Different colours of white light travel with different speeds

31 A uniform metal wire of resistance (R) is stretched until its radius becomes half of its original value. What is the new resistance of the wire? 1

- (A) 4 R (B) 2 R (C) 8 R (D) 16 R

The following one question consists of two statements – **Assertion** (A) and **Reason** (R). Answer this question by selecting the appropriate option given below:

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- C. A is true but R is false.
- D. A is false but R is true.

32 **Assertion (A):** If the potential difference across a resistor is doubled, its resistance also doubles. **1**

Reason (R): The resistance of a resistor remains constant if its temperature and other physical conditions remain unchanged.

33 (A) What is meant by power of accommodation of eye? **2**

(B) When a person shifts his vision from a distant tree to a nearby book, how do the thickness and focal length of the eye lens change?

34 **Attempt either option A or B** **2**

A. The linear magnification produced by a spherical mirror is $-1/5$. Analysing this value, state the (i) type of spherical mirror and (ii) the position of the object with respect to the pole of mirror. Draw ray diagram to justify your answer.

OR

B. Draw a ray diagram to show the path of the reflected ray in each of the following cases.

i) Incident ray is directed towards principal focus of a convex mirror.

ii) Incident ray is parallel to the principal axis of a convex mirror.

35 “Rainbow is an example of dispersion of sunlight.” Justify this statement by explaining the formation of rainbow in the sky with the help of a labelled diagram. **3**

36 An object is kept in front of a concave mirror of focal length 20 cm. The image is three times the size of the object. Calculate two possible distances of the object from the mirror. **3**

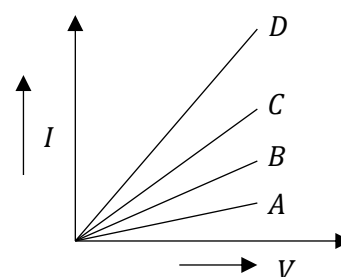
37 (A) What is meant by electric current? Define its SI unit. **3**

(B) State Ohm’s law.

(C) Study the I-V graph for four conductors A, B, C, D having resistances R_A , R_B , R_C and R_D respectively and answer the following questions:

(i) If all the conductors are of same length and same material, which is the thickest?

(ii) Which one of these is the best conductor?



38 A student experiences difficulty in reading a book placed at a normal reading distance. However, he can see distant objects clearly. The optometrist recommends spectacles with a suitable lens to correct the defect. **4**

A. Identify the defect of vision suffered by the student

B. State two possible causes of this defect.

Attempt either option C or D.

- C. Draw a labelled ray diagram showing the correction of this defect using a suitable lens

OR

- D. A person suffering from this defect has a near point at **1m**. Calculate the power of the lens required to enable the person to read a book at a distance of 25 cm

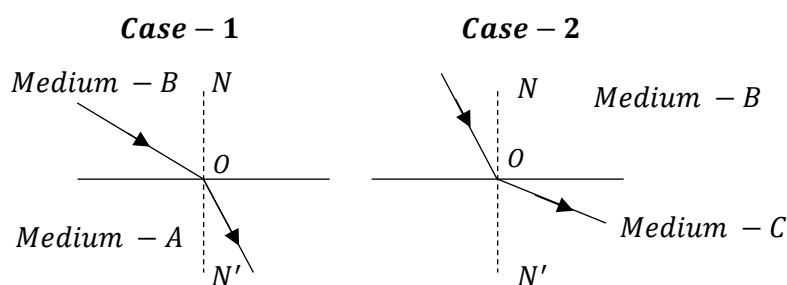
39 **Attempt either option A or B.**

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- A. (a) Draw a neat, labelled ray diagram to show the path of a ray of light passing through a rectangular glass slab. Why does the emergent ray remain parallel to the incident ray?
- (b) A student focused the image of a candle flame on a white screen using a convex lens. He noted down the positions of the candle flame, screen and lens as 12 cm, 88 cm and 50 cm respectively
- (i) Find the focal length of the convex lens.
- (ii) Find the position of the image of the candle flame if it is shifted towards the lens at a position of 31 cm.

OR

- B. (a) State Snell's law of refraction of light.
- (b) The absolute refractive indices of glass and water are $\frac{3}{2}$ and $\frac{4}{3}$ respectively. If the speed of light in glass is 2×10^8 m/s, calculate the speed of light in (i) vacuum (ii) water
- (c) Following diagrams show refraction of light in two cases. Answer the questions given below based on the given diagrams.



- (i) Which medium is optically rarer among A, B and C?
- (ii) Which medium is optically denser among A, B and C?
- (iii) Arrange A, B and C in ascending order with respect to speed of light.
