

BUDHA DAL PUBLIC SCHOOL PATIALA
Pre - Board Examination (15 December 2025)
CLASS - X
PAPER- SCIENCE (SET-A)

M.M. 80

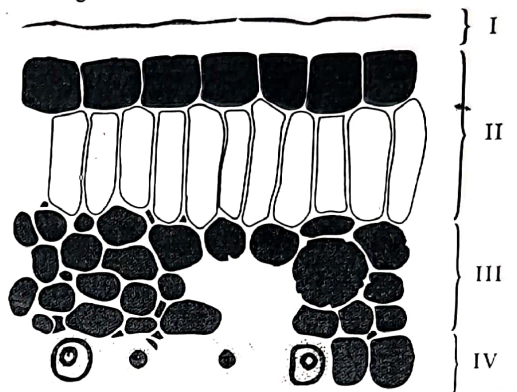
Time: 3 hr.

General Instructions:

- (i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
(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.

Section - A
Biology

- Q1. In the following diagram, identify the cells through which massive amounts of gaseous exchange takes place for photosynthesis: (1)



- a) I b) IV c) III d) II
- Q2. During exhalation, the exchange of gases takes place between (1)
a) Alveoli of the lungs and blood
b) Alveoli of lungs and tissue fluid
c) Blood and body tissues
d) Tissue fluid and blood capillaries
- Q3. Posture and balance of the body is controlled by (1)
a) cerebrum b) cerebellum c) medulla d) pons
- Q4. Consider the following statements: (1)
A) Immediate response to stimulus is shown by Mimosa pudica
B) Stems are positively geotropic while roots are negatively geotropic
C) Cytokinins promote cell division and are found in fruits and seeds
D) Absciscic acid promotes plant growth
Which of these statement(s) is/are true?
a) (A) and (C) only b) (B) and (C) only c) (A) and (B) only d) (A), (B) and (D) only
- Q5. A growing seedling is kept in a dark room. After few days, seedling is placed near a window. The top part of seedling bends towards the window. This is an example of: (1)
a) Chemotropism b) Hydrotropism c) Phototropism d) Geotropism
- Q6. Which of the following statement(s) is/are correct? (1)
A) All green plants are producers
B) Green plants get their food from organic compounds
C) Producers prepare their own food from inorganic compounds
D) Plants convert solar energy into chemical energy
a) (B) and (C) only b) (A), (C) and (D) only c) (A) only d) (B) and (D) only

A-1

7. Plastic wastes

- A) Are biodegradable and easily break down in the environment
- B) Poses no harm to wildlife and marine ecosystems
- C) Can be effectively recycled and reused
- D) Has no impact on human health

The correct statement(s) is/are

- b) B, C and D b) A and C c) C only d) B and D

For the following questions, two statements are given - one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a) Both A and R are true and R is the correct explanation of the assertion.
- b) Both A and R are true but Reason R is not a correct explanation of Assertion.
- c) A is true but R is false.
- d) A is false but R is true.

Q8. Assertion : Dominant traits are always more common in a population than recessive traits. (1)

Reason : Dominant traits mask the expression of recessive traits in heterozygous individuals.

Q9. Assertion : Microorganisms decompose organic waste into harmless substances. (1)

Reason: Biodegradable substances have a harmful effect on human life.

Q10. If you were a herbivore, what would you expect the length of your small intestine to be? (2)

- Q11. a) Write the function of valves present in between atria and ventricles. (2)
b) Write one structural difference between the composition of artery and veins.

OR

What will happen if we are injured and start bleeding?

Q12. Observe the food chain : Plant (1000 kJ) $\longrightarrow$ Goat $\longrightarrow$ Lion (2)

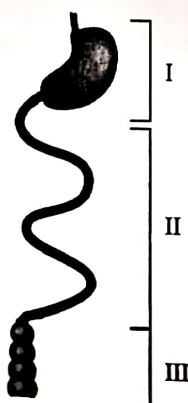
- a) If autotrophs occupying the first trophic level are called producers, what are herbivores called as?
- b) How much energy does the lion get in the above food chain?

Q13. A squirrel is in a scary situation. Its body has to prepare for either fighting or running away. State the immediate changes that take place in its body so that the squirrel is able to either fight or run? (3)

Q14. A cross was made between pure breeding pea plants one with round and green seeds and the other with wrinkled and yellow seeds. (3)

- a) Write the genotype of F_1 progeny. Give reason for your answer.
- b) Write the different type of F_2 progeny obtained alongwith their ratios when F_1 progeny was selfed.

Q15. Based on the figure labeled I, II and III answers the questions that follows: (4)



A-2

- a) What secretions are produced in part I and what are their functions?
- b) Are the secretions produced in part I reason for acidity in adults? If yes, how do part I and II protect themselves from such acidic secretions?
- c) How is transport of food from part I and II regulated?
- d) How do the structural features of part II facilitate nutrient absorption in an individual?
- e) Compare the digestion and absorption processes in parts II and III.

Q16.

- a) Describe the role of (i) prostate gland and seminal vesicle and (ii) testes in the human male reproductive system. (5)
- b) How is the surgical removal of unwanted pregnancies misused? What steps are being taken by the government and organizations to combat it?
- c) How does oral contraceptive pills prevent conception?

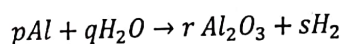
OR

Give reason for the following:

- a) During reproduction inheritance of different proteins will lead to altered body designs.
- b) Fertilization cannot take place in flowers if pollination does not occur
- c) All multicellular organisms cannot give rise to new individuals through fragmentation or regeneration.
- d) Vegetative propagation is practiced for growing only some type of plants.
- e) The parents and off-springs of organisms reproducing sexually have the same number of chromosomes.

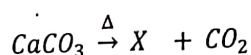
Section - B Chemistry

Q17. Consider the following chemical equation (1)



Write coefficient p q r s

Q18. Identify the product 'X' obtained in the following chemical reaction (1)



- a) Quick lime b) Gypsum c) Lime stone d) Plastic of Paris

Q19. Which of the given option represent a family of salts? (1)

- a) NaCl, Na₂SO₄, CaSO₄ b) K₂SO₄, Na₂SO₄, CaSO₄
c) NaNO₃, CaCO₃, Na₂CO₃ d) MgSO₄, CuSO₄, MgCl₂

Q20. The chemical formula of plaster of Paris is (1)

- a) CaSO₄ · 2H₂O b) CaSO₄ · H₂O c) CaSO₄ · ½ H₂O d) 2CaSO₄ · H₂O

Q21. Metal oxides generally react with acids, but few oxides of metal also react with basis such metallic oxides are : (1)

- I) MgO II) ZnO III) Al₂O₃ IV) CaO

- a) I and II b) II and III c) III and IV d) I and IV

Q22. The metals which are found in both free state as well as combined state are : (1)

- a) Gold and Platinum b) Platinum and Silver
c) Copper and Silver d) Gold and Silver

Q23. A hydrocarbon which contains two C - C single bonds and one C = C triple bond is (1)

- a) Ethyne b) Propyne c) Butyne d) Benzene

A - 3



For the following questions, two statements are given – one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- Both A and R are true and R is the correct explanation of the assertion.
- Both A and R are true but Reason R is not a correct explanation of Assertion.
- A is true but R is false.
- A is false but R is true.

Assertion : Metals in the middle of activity series are found in nature as sulphides or carbonates.

Reason: The sulphide ores are calcinated whereas carbonated ores are roasted to extract metals from them.

Q25. A crystalline substance of green colour 'X' emits gases of characteristic odour when heated over a flame. It first loses water and changes colour. On further heating, it decomposes and produce a solid compound 'Y'. (2)

- Identify 'X' and 'Y'.
- Write the balanced chemical equation when 'X' is heated.

Q26. a) While electrolysing water before passing the current, some drops of an acid are added. Why? Name the gases liberated at cathode and anode. Write the ratio between the volume of gas collected at cathode and the volume of gas collected at anode. (3)
b) What is observed when silver chloride is exposed to sunlight? Give the type of reaction involved.

Q27. A metal 'A' reacts violently with cold water and the gas evolved catches fire. Another metal 'B' when dipped in water starts floating. The metal 'C' does not react either with cold or hot water, but reacts with steam. The metal 'D' does not react with water at all. Identify the metals 'A', 'B', 'C' and 'D'. Write the balanced chemical equation of metal A with cold water. (3)

Q28. Read the following and answer the questions: (4)
The melting points and boiling points of some ionic compounds are given below:

Compound	Melting Point (K)	Boiling Point (K)
NaCl	1074	1686
LiCl	887	1600
CaCl ₂	1045	1900
CaO	2850	3120
MgCl ₂	981	1685

These compounds are termed ionic because they are formed by the transfer of electrons from a metal to a non-metal. The electron transfer in such compounds is controlled by the electronic configuration of the elements involved. Every element tends to attain a completely filled valence shell of its nearest noble gas or a stable octet.

- Show the electron transfer in the formation of magnesium chloride.
- List two properties of ionic compounds other than their high melting and boiling points.
- While forming an ionic compound, say, sodium, chloride, how does sodium atom attain its stable configuration?

OR

Give reasons.

- Why do ionic compounds in the solid state not conduct electricity?
- What happens at the cathode when electricity is passed through an aqueous solution of sodium chloride?

A-4

- a) A carbon compound 'A' is widely used as preservation in pickles and has molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form sweet smelling compound B. (5)
- Identify the compound A and write its structure.
 - Write the chemical equation for the reaction of 'A' with ethanol to form compound 'B'
- b) Name the following compounds
- $CH_3 - CH_2 - \overset{\overset{O}{\parallel}}{C} - CH_2 - CH_3$
 - $CH_3 - CH_2 - CH_2 - COOH$
- c) Draw the isomer of pentane

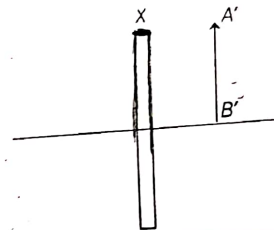
OR

- a) With the help of diagram show the formation of micelles, when soap is applied on oily dirt.
- b) Take two test tubes X and Y with 10 ml of hard water in each. In test tube 'X' add few drops of soap solution and in test tube 'Y' and a few drops of detergent solution, shake both the test tubes for the same time.
- In which test tube the formation of foam will be more why?
 - In which test tube is a curdy solid formed? Why?
- c) Draw the electron dot structure of CO_2 .

Section - C Physics

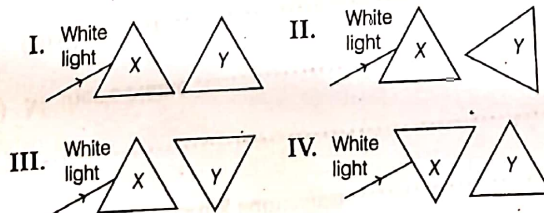
- Q30. In the figure, if A'B' is the image formed by an object placed in front of the optical object. Identify the correct name of X and the type of image formed. (1)

	X	Types of Image
I)	Concave lens	Real and inverted
II)	Convex lens	Virtual and erect
III)	Concave mirror	Virtual and erect
IV)	Convex mirror	Real and inverted



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

- Q31. When white light is incident on the prism X, which of the arrangements of two prisms are used to get the white light from prism Y on the screen? (1)



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

A-5

Assertion : Magnification of concave mirror is always equal to one or more than one. (1)
Reason : Concave mirror always forms diminished image of the object.

For the following questions, two statements are given - one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a) Both A and R are true and R is the correct explanation of the Assertion.
- b) Both A and R are true but Reason R is not a correct explanation of Assertion.
- c) A is true but R is false.
- d) A is false but R is true.

Q33. A 10 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 18 cm. Find the nature, position and size of the image formed. (2)

Q34. An electric bulb is rated 220 V and 100 W. Calculate the power consumed when it is operated on 110 V. (2)

OR

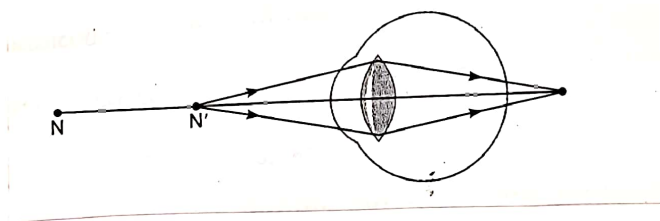
A piece of wire of resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R' then find the ratio R/R' .

- Q35. a) Draw magnetic field lines produced around a current carrying straight conductor passing through a cardboard. Name the rule to mark the direction of these field lines. (3)
b) Two fuse wires of same length are rated 5 A and 20 A. Which of the two fuse wires is thicker and why?
c) Why can't two magnetic lines intersect each other?

Q36. A student needs to make a 0.12Ω resistor. She has some copper wire of 0.80 mm diameter. (3)
Resistivity of copper is $1.8 \times 10^{-8} \Omega \text{m}$

- a) Determine the cross-sectional area of the wire.
- b) Calculate the length of wire required for the 0.12Ω resistor.

Q37. Study the diagram given below and answer the questions that follow: (3)



- a) Name the defect of vision represented in the diagram. Give reason for your answer.
- b) List two causes of this defect.
- c) With the help of a diagram show how this defect of vision is corrected.

(4)

The table given below shows the results of an investigation using a lens.

Observation	Object distance u (cm)	Image distance v (cm)	Object height h_o (cm)	Image height h_i (cm)
1	-10	-20.0	+5	+10
2	-30	+30.0	+5	-5
3	-45	+22.5	+5	-2.5
4	-60	+20.0	+5	-1.7
5	-75	+18.8	+5	-1.3
6	-90	-----	+5	-----

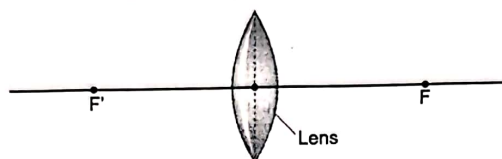
(a) Describe the focal length of a lens.

(b) Using the values of u and v in observation 2, calculate the focal length f of the lens.

(c) Calculate the image distance of observation 6.

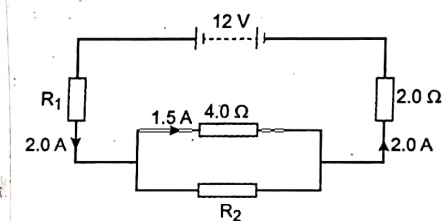
OR

(d) On the given figure, draw a ray diagram to show how the lens is used as a magnifying glass to produce an image of an object that is enlarged and virtual.



Q39. A circuit alongside is a part of an electrical device. Use the information given in the question to calculate the following:

- Potential difference across R_2 .
- Value of the resistance R_2 .
- Value of the resistance R_1 .



(5)

OR

Two lamps, one rated at 40 W - 220 V and the other at 60 W - 220 V, are connected in parallel to the electric supply at 220 V.

- Draw a circuit diagram to show the connections
- Calculate the current drawn from the electric supply source
- Calculate the total energy consumed by the two lamps together when they operate for one hour.

A-7