

CBSE Board
Class X Science
Board Paper - 2008

Time: 2½ hrs

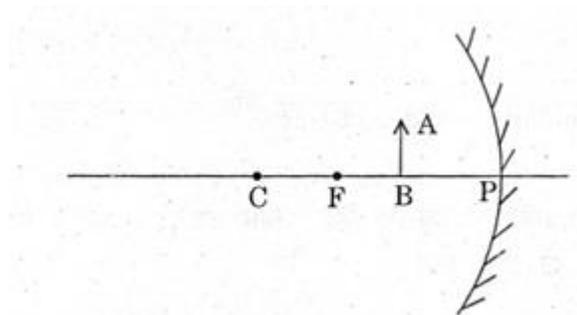
Total Marks: 60

General Instructions:

1. The question paper comprises of **two Sections, A and B**. You are to attempt both the Sections.
2. **All** questions are **compulsory**.
3. There is no overall choice. However, internal choice has been provided in some questions. Only one option in such questions is to be attempted.
4. All questions of **Section A** and all questions of **Section B** are to be attempted separately.
5. Questions number **1 to 6** in **Section A** and **17 to 19** in **Section B** are short answer questions. These questions carry **one mark each**.
6. Questions number **7 to 10** in **Section A** and **20 to 24** in **Section B** are short answer questions and carry **two marks each**.
7. Questions numbers **11 to 14** in **Section A** and **25 and 26** in **Section B** are also short answer questions and carry **three marks each**.
8. Question numbers **15 and 16** in **Section A** and **27** in **Section B** are long answer questions and carry **five marks each**.

SECTION-A

- Q1. Balance the following chemical equation:
- $$\text{Fe(s)} + \text{H}_2\text{O(g)} \rightarrow \text{Fe}_3\text{O}_4\text{(s)} + \text{H}_2\text{(g)}$$
- Q2. Why is respiration considered an exothermic process?
- Q3. How does the flow of acid rain water into a river make the survival of aquatic life in the river difficult?
- Q4. Draw the following diagram in your answer-book and show the formation of image of the object, AB with the help of suitable rays.



- Q5. Why is a series arrangement not used for connecting domestic electrical appliances in a circuit?
- Q6. Out of 60 W and 40 W lamps, which one has a higher electrical resistance when in use?
- Q7. Write the chemical formula for washing soda. How may it be obtained from baking soda? Name an industrial use of washing soda other than washing clothes.
- Q8. Give an example of a decomposition reaction. Describe an activity to illustrate such a reaction by heating.
- Q9. Draw ray diagrams to represent the nature, position and relative size of the image formed by a convex lens for the object placed:
- at $2F_1$.
 - between F_1 and the optical centre O of lens.
- Q10. What is meant by the term, 'magnetic field'? Why does a compass needle show deflection when brought near a bar magnet?
- Q11.
- Why are covalent compounds generally poor conductors of electricity?
 - Name the following compound:
$$\begin{array}{ccccccc} & \text{H} & & \text{H} & & & \\ & | & & | & & & \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - \text{H} \\ & | & & || & & | & \\ & \text{H} & & \text{O} & & \text{H} & \end{array}$$
 - Name the gas evolved when ethanoic acid is added to sodium carbonate. How would you prove the presence of this gas?
- Q12.
- What are amphoteric oxides? Choose the amphoteric oxides from amongst the following oxides:
 Na_2O , ZnO , Al_2O_3 , CO_2 , H_2O
 - Why is it that non-metals do not displace hydrogen from dilute acids?

Q13. Two lamps, one rated 60 W at 220 V and the other 40 W at 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.
- Calculate the total energy consumed by the two lamps together when they operate for one hour.

Q14.

- Distinguish between the terms 'overloading' and 'short-circuiting' as used in domestic circuits.
- Why are the coils of electric toasters made of an alloy rather than a pure metal?

Q15. On the basis of Mendeleev's Periodic Table given below, answer the questions that follow the table:

Group →	I		II		III		IV		V		VI		VII		VIII				
Oxide	R ₂ O		RO		R ₂ O ₃		RO ₂		R ₂ O ₅		RO ₃		R ₂ O ₇		RO ₄				
Hydride	RH		RH ₂		RH ₃		RH ₄		RH ₃		RH ₂		RH						
Periods ↓	A	B	A	B	A	B	A	B	A	B	A	B	A	B	Transition series				
1	H 1-008																		
2	Li 6-939		Be 9-012		B 10-81		C 12-011		N 14-007		O 15-999		F 18-998						
3	Na 22-99		Mg 24-31		Al 29-98		Si 28-09		P 30-974		S 32-06		Cl 35-453						
4	First series : K 39-102		Ca 40-08		Sc 44-96		Ti 47-90		V 50-94		Cr 50-20		Mn 54-94		Fe 55-85		Co 58-93		Ni 58-71
	Second series : Cu 63-54		Zn 65-37		Ga 69-72		Ge 72-59		As 74-92		Se 78-96		Br 79-909						
5	First series : Rb 85-47		Sr 87-62		Y 88-91		Zr 91-22		Nb 92-91		Mo 95-94		Tc 99		Ru 101-07		Rh 102-91		Pd 106-4
	Second series : Ag 107-87		Cd 112-40		In 114-82		Sn 118-69		Sb 121-75		Te 127-60		I 126-90						
6	First series : Cs 132-90		Ba 137-34		La 138-91		Hf 178-49		Ta 180-95		W 183-85				Os 190-2		Ir 192-2		Pt 195-09
	Second series : Au 196-97		Hg 200-59		Tl 204-37		Pb 207-19		Bi 208-98										

(a) Name the element which is in

- i) 1st group and 3rd period.
- ii) 7th group and 2nd period.

(b) Suggest the formula for the following:

- i) Oxide of nitrogen
- ii) Hydride of oxygen

(c) In group VIII of the Periodic Table, why does cobalt with atomic mass 58.93 appear before nickel having atomic mass 58.71?

(d) Beside gallium, which two other elements have since been discovered for which Mendeleev had left gaps in his Periodic Table?

(e) Using atomic masses of Li, Na and K, find the average atomic mass of Li and K and compare it with the atomic mass of Na. State the conclusion drawn from this activity.

OR

- a) Why do we classify elements?
- b) What were the two criteria used by Mendeleev in creating his Periodic Table?
- c) Why did Mendeleev leave some gaps in his Periodic Table?
- d) In Mendeleev's Periodic Table, why was there no mention of Noble gases like Helium, Neon and Argon?
- e) Would you place the two isotopes of chlorine, Cl-35 and Cl-37 in different slots because of their different atomic masses or in the same slot because their chemical properties are the same? Justify your answer.

Q16.

- a) What is meant by dispersion of white light? Describe the formation of rainbow in the sky with the help of a diagram.
- b) What is hypermetropia? Draw ray diagrams to show the image formation of an object by:
 - i) Hypermetropic eye
 - ii) Correction made with a suitable lens for hypermetropic eye.

OR



- i) Colour of the clear sky is blue.
- ii) The sun can be seen about two minutes before actual sunrise.
- iii) We cannot see an object clearly if it is placed very close to the eyes.

(b) What is Presbyopia? Write two causes of this defect.

SECTION-B

Q17. Which one of the following is a renewable resource?

Natural gas, Petroleum, Ground water, Coal

Q18. What is the effect of DNA copying which is not perfectly accurate on the reproduction process?

Q19. How do autotrophs obtain CO_2 and N_2 to make their food?

Q20. List any four characteristics of biogas on account of which it is considered an ideal fuel.

Q21. Discuss one limitation each for the extracting of energy from:

- a) Winds
- b) Tides

Q22. Write one function each of the following components of the transport system in human beings:

- a) Blood vessels
- b) Blood platelets
- c) Lymph
- d) Heart

Q23. Name one sexually transmitted disease each caused due to bacterial infection and viral infection. How can these be prevented?

- Q24. What are fossils? What do they tell about the process of evolution?
- Q25. How is ozone formed in the upper atmosphere? Why is damage to ozone layer a cause of concern to us? What causes this damage?
- Q26. How are oxygen and carbon dioxide transported in human beings? How are lungs designed to maximise the area for exchange of gases?
- Q27. (a) Draw the structure of a neuron and label the following on it:
Nucleus, Dendrite, Cell body and Axon
- (b) Name the part of neuron:
- Where information is acquired.
 - Through which information travels as an electrical impulse.

OR

- (a) What is (i) phototropism and (ii) geotropism? With labelled diagrams describe an activity to show that light and gravity change the direction that plant parts grow in.
- (b) Mention the role of each of the following plant hormones:
- Auxin
 - Abscisic acid