

SE X
SCIENCE PAPER 2009.
Set I

Time allowed: 2 hours 30 mins; Maximum Marks: 60

General Instructions:

- 1) The question paper comprises of two sections A and B. You are to attempt both sections.
- 2) All questions are compulsory.
- 3) There is no overall choice. However, internal choice has been provided in all the three questions of five marks category. 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 1 to 6 in section A and 17 to 19 in section B are short answer type questions. These carry one mark each.
- 6) Questions 7 to 10 in section A and 20 to 24 in section B are short answer type questions and carry two marks each.
- 7) Questions 11 to 14 in section A and 25 to 26 in section B are also short answer type questions and carry three marks each.
- 8) Questions 15 and 16 in section A and question 27 in section B are long answer type questions and carry five marks each.

SECTION A

Question 1

1. In electrolysis of water, why is the volume of gas collected over one electrode double the volume of gas collected over the other electrode?

Question 2

2. What effect does an increase in the concentration of H^+ (aq.) in a solution have on the pH of the solution?

Question 3

3. What happens when a small piece of sodium is dropped into ethanol?

Question 4

4. Draw a schematic diagram of an electric circuit consisting of a battery of two cells 1.5 V each, $5\ \Omega$, $10\ \Omega$ and $15\ \Omega$ resistors and a plug key, all connected in series.

Question 5

5. When is the force experienced by a current-carrying conductor placed in a magnetic field the largest?

Question 6

6. State the rule that gives the direction of the magnetic field associated with a current-carrying conductor.

Question 7

7.(i) Name the products formed when sodium hydrogen carbonate is heated.

Â Â (ii) Write the chemical equation for the above chemical reaction.

Question 8

8. (i) What is formed when a solution of potassium iodide is added to a solution of lead nitrate

Â Â Â Â Â Â Â Â Â taken in a test tube?

Â (ii) What type of a reaction is this?

Â (iii) Write a balanced chemical equation to represent the above reaction.

Question 9

9. What is an electric circuit? Distinguish between an open and a closed circuit.

Question 10

10.Â Calculate the resistance of an electric bulb which allows a 10 A current to flow when connected to a 220 V power source.

Question 11

11.(a) What is meant by periodicity in properties of elements with reference to the periodic table?

Â Â Â (b) Why do all the elements of the same group have similar properties?

Â Â Â (c) How will the tendency to gain electrons change as we go from left to right across a period?

Â Â Â Why?

Question 12

12 (a) Distinguish between esterification and saponification reactions of organic compounds.

Â Â Â Â (b) With a labeled diagram describe an activity to show the formation of an ester.

Question 13

13. For which position of the object does a convex lens form a virtual and erect image? Explain with the help of a ray diagram.

Question 14

14. (a) Define the term $\sim\text{volt}\text{TM}$.

(b) State the relation between work, charge and potential difference for an electric circuit.

Calculate the potential difference between the two terminals of a battery if 100 joules of work is required to transfer 20 coulombs of charge from one terminal of the battery to the other.

Question 15

15. (a) Distinguish between ionic and covalent compounds under the following properties:

Â Â Â Â Â Â Â Â Â Â (i) Strength of forces between constituent elements

Â Â Â Â Â Â Â Â Â Â (ii) Solubility of compounds in water

Â Â Â Â Â Â Â Â Â Â (iii) Electrical conduction in substances

Â Â Â Â (b) Explain how the following metals are obtained from their compounds by the reduction process:

Â Â Â Â Â Â Â Â Â Â (i) Metal M which is in the middle of the reactivity series.

Â Â Â Â Â Â Â Â Â Â (ii) Metal N which is high up in the reactivity series.

Â Â Â Â Â Â Â Â Give one example of each.

Question 16

16. (a) What is myopia? State the two causes of myopia. With the help of labelled ray diagrams show

(i) the eye defect myopia.

(ii) correction of myopia using a lens.

(b) Why is the normal eye unable to focus on an object placed within 10 cm from the eye?

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SECTION B**Question 17**

17. Which compounds are responsible for the depletion of ozone layer?

Question 18

18. Why is DNA copying an essential part of the process of reproduction?

Question 19

19. Where does digestion of fat take place in our body?

Question 20

20. How is charcoal obtained from wood? Why charcoal is considered a better fuel than wood?

Question 21

21. Describe how hydro-energy can convert into electrical energy. Write any two limitations of hydro – energy?

Question 22

22. What is ‘Chipko Movement’? Why should we conserve forests?

Question 23

23. Suggest any four changes that you would like to be incorporated in the life – style of students of your age to move towards a sustainable use of available resources?

Question 24

24. Describe the role of the following in human beings:

- (i) Seminal vesicles
- (ii) Prostate gland

Question 25

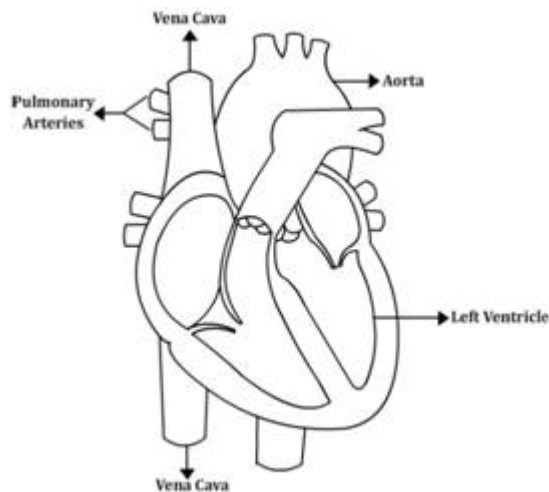
25. What is ‘Phototropism’? How does it occur in plants? Describe an activity to demonstrate phototropism.

Question 26

26. Explain how the sex of the child is determined at the time of conception in human beings.

Question 27

27. (a) Draw a sectional view of the human heart and label on it Aorta, Pulmonary arteries, Vena cava, Left ventricle.



(b) Why is double circulation of blood necessary in human beings?