

CBSE
Class X Science
Sample Paper - 10

Time: 3 hrs.

Total Marks: 80

General Instructions:

- The question paper comprises five sections – A, B, C, D and E. You are to attempt all the sections.
 - All questions are compulsory.
 - Internal choice is given in sections B, C, D and E.
 - Question numbers 1 and 2 in Section A are one mark questions. They are to be answered in one word or in one sentence.
 - Question numbers 3 to 5 in Section B are two marks questions. These are to be answered in about 30 words each.
 - Question numbers 6 to 15 in Section C are three marks questions. These are to be answered in about 50 words each.
 - Question numbers 16 to 21 in Section D are five marks questions. These are to be answered in about 70 words each.
 - Question numbers 22 to 27 in Section E are based on practical skills. Each question is a two marks question. These are to be answered in brief.
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Section A

1. List two basic differences between the male and female germ cell. (1)
2. A list of organisms is given below: (1)
Peacock, Snake, Grass, Frog, Grasshopper
Construct a food chain showing snake at the fourth trophic level.

Section B

3. Why do young shoots of herbs undergo wilting on a sunny day? (2)

OR

Why does bleeding occur from the cut surface of a plant?

4. An oven is used on a 230-V supply and its power rating is 1000 W at 230 V. Calculate (i) its current when it is operating at 230 V and (ii) its resistance when it is in use. (2)

5. In the following reaction between lead sulphide and hydrogen peroxide:



- (a) Which substance is reduced?
 (b) Which substance is oxidised? (2)

Section C

6. Element 'X' belongs to the 3rd period and group 13 of the modern periodic table. (3)
 (a) Determine the valence electrons and the valency of 'X'.
 (b) Molecular formula of the compound formed when 'X' reacts with an element 'Y' (atomic number = 8).
 (c) Write the name and formula of the compound formed when 'X' combines with chlorine.

OR

Given below are four elements with their atomic numbers.

Element	A	B	C	D
At. No.	16	11	3	14

- (a) Identify the elements which belong to the same group of the modern periodic table.
 (b) Arrange the given elements in the decreasing order of atomic size.
 (c) Write the formula of the oxide of B.
 (d) Which of the above elements is a metalloid?
7. Give reasons for the following: (3)
 (a) We boil the leaf in alcohol while testing for the presence of starch.
 (b) It is dangerous to inhale air containing carbon monoxide.
 (c) Plants excrete carbon dioxide as a waste only at night time.
8. Give reasons for the following: (3)
 (a) Oxidation of ethanol with CrO_3 produces ethanal, while ethanol when oxidised with alkaline KMnO_4 produces ethanoic acid.
 (b) Propanone forms addition product with HCN .
 (c) Alcohol supplied for industrial purposes is mixed with copper sulphate.
9. How electric current is produced using a magnetic field? Describe an experiment to show the magnetic field lines around a current-carrying circular coil. (3)
10. Define the term atmospheric refraction. Name the colour of light which undergoes (i) more scattering and (ii) less scattering while passing through the atmosphere. Draw a ray diagram to show the formation of a rainbow. (3)

11. The image of an object placed at 15 cm in front of a lens is obtained at the other side of the lens on a screen at a distance of 30 cm from it. Find the focal length of the lens. What would be the nature and height of the image if the object is 2 cm high? (3)

OR

A convex mirror used on a bus has a radius of curvature 2 m. If a scooter is located at 600 cm from this mirror, find the position, nature and magnification of the image formed in the mirror.

12. (3)
- (a) Name two constituents of baking powder.
 - (b) How does baking powder differ from baking soda?
 - (c) Explain the action of baking powder in the making of cake (or bread). Write the equation of the reaction involved.

13. You have visited a zoo where you have observed that a fish is respiring at a faster rate as compared to a dog. Explain the reason for this. (3)

OR

What are the consequences of deficiency of haemoglobin in our body?

14. A cross was carried out between a pure bred pea plant with axial flowers and a pure bred pea plant with terminal flowers, and the F_1 phenotype was obtained. Later, the progeny was selfed to obtain the F_2 progeny. Answer the following questions: (3)
- (a) What is the phenotype of the F_1 progeny and why?
 - (b) Give the phenotypic ratio of the F_2 progeny.
 - (c) Why is the F_2 progeny different from the F_1 progeny?
15. It is a well-known fact that a pregnant woman's health is the backbone of every family, society and thus nation. (3)
- (a) Which tissue is responsible for providing nutrition from the mother to the growing embryo?
 - (b) According to you, what can be the likely measures to maintain a woman's health during pregnancy?

Section D

16. (5)

- (a) What is a neuron? Draw a neat and labelled diagram of a neuron.
- (b) What is a synapse? What happens at the synapse between two neurons? How are the messages carried across a synapse? Explain with the help of a labelled diagram.

OR

- (a) Which part of the nervous system controls the reflex arc?
- (b) With the help of a diagram trace the sequence of events which occur when we touch a hot object.
- (c) Mention the part of the neuron which acquires information and the form in which information travels.

17. What is meant by refraction of light? Define refractive index in terms of speed of light in air and speed of light in refracting medium.

One student measures the angle of refraction as 25° in medium A and the other student measures the angle of refraction as 23° in the other medium B for the same angle of incidence 40° . Find the refractive index of both media. In which medium does light travel faster? (5)

OR

Draw the ray diagrams and state the nature of the image and its position when object is placed

- (a) beyond the centre of curvature in front of the concave mirror
- (b) at infinity in front of the convex mirror

18. Write the balanced chemical equation for the reactions taking place when (5)

- (a) Zinc carbonate is calcinated.
- (b) Zinc sulphide is roasted.
- (c) Zinc oxide is reduced to zinc.
- (d) Cinnabar is heated in air.
- (e) Manganese dioxide is heated with aluminium powder.

OR

- (a) Distinguish between ionic and covalent compounds under the following properties:
 - (i) Strength of forces between constituent elements
 - (ii) Solubility of compounds in water
 - (iii) Electrical conduction in substances

(b) Distinguish between 'roasting' and 'calcination'. Which of these two is used for sulphide ores and why?

19. (5)

(a) List the factors on which the power consumed by an electrical appliance depends.

(b) A heater connected to a 230-V power source draws 5.5 A current. Calculate

(i) Electric power of the heater

(ii) Resistance of the heater

(iii) Cost of operating this heater for 20 hours if commercial electricity unit cost is Rs 4.

20. (5)

(a) List any two ways by which we can help in reducing the problem of waste disposal.

(b) Mention various threats to wildlife. What steps can be taken to conserve wild life?

21. (5)

When a strip of red-brown metal X is placed in a colourless salt solution YNO_3 , metal Y is set free and a blue-coloured salt solution $X(NO_3)_2$ is formed. The liberated metal Y forms a shining white deposit on the strip of metal X.

(a) What do you think metal X is?

(b) Name the salt YNO_3 .

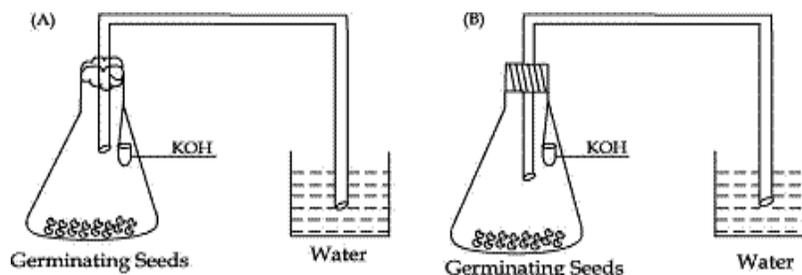
(c) What could be metal Y?

(d) Name the salt $X(NO_3)_2$.

(e) What type of reaction takes place between metal X and salt solution YNO_3 ?

Section E

22. Using the same number of germinating seeds, two students A and B set up their experiments separately. Student A used cotton wool to plug the bent tube to the mouth of the flask, while student B used an airtight rubber cork. (2)



- (i) What would be the observation after few hours?
(ii) What is the role of KOH?

23. What is the process of cell division in binary fission?

OR

A slide showing several amoebae was given to a student and she was asked to focus on amoebae undergoing binary fission. What is the correct focussing of the dividing amoebae?

24. What products are formed when zinc reacts with dilute sulphuric acid? (2)

OR

On adding a strip of zinc to blue copper sulphate solution, the blue colour fades to give a colourless solution. Give the reason for the above observation along with the chemical equation for the reaction.

25. Salt A, commonly used in bakery products, on heating gets converted to Salt B, which is used for removal of hardness of water, and Gas C is evolved. Gas C turns lime water milky. Identify A, B and C. (2)

26. A student uses two resistors $12\ \Omega$ and $4\ \Omega$, a 12-V battery and an ammeter. He sets up two circuits, connecting the two resistors to the battery, first in series and then in parallel. Let I_1 be the current measured when the resistors are in series and I_2 be the current measured when they are in parallel. What will be the ratio I_1/I_2 ? (2)

27. Four students P, Q, R and S measure the distance of an image from a convex lens of power 2.5 D for an object which is placed at a distance of 60 cm from the lens, and the image is formed at the other side of the lens. Values measured by each of them were 122 cm, 119 cm, 120 cm and 121 cm, respectively. Which student has performed the experiment correctly? (2)

OR

Which lens is used in a magnifying glass? What must be the position of an object so as to obtain the magnified, virtual and erect image of an object?