CBSE
Class X Science
Sample Paper - 8

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.

SECTION A

1. Which muscle is called the pacemaker of the heart? Why? (1)

2. Mention the names of water harvesting techniques used in Kerala and Uttar Pradesh. (1)

SECTION B

3. Resistivity of a conducting wire is $2{\cdot}60 \times 10^{-6}\Omega$m. Calculate the resistance of that wire of length 10 m and cross-sectional area 1.5×10^{-3} m^2. (2)

OR

State the factors affecting resistance of a conductor.

4. A brown substance 'X' on heating in air forms a compound 'Y'. When hydrogen gas is passed over 'Y', it changes to 'X' again. (2)
(a) Name substances 'X' and 'Y'.
(b) Name the processes occurring during the two changes.

5. Define watershed management. State any one advantage of it. (2)

SECTION C

6. Explain with the help of an example how body characteristics are used to determine closeness of species in terms of evolution. (3)

OR

(a) Differentiate between autotrophs and heterotrophs.
(b) Who constitutes the first trophic level in a food chain?

7. An erect image of an object is to be formed using a concave mirror of 15cm focal length. Find the range of distance of the object from the mirror? Draw a ray diagram and state the nature and size of the image for the observer. (3)

OR

A 2 cm high object is placed at a distance of 20 cm from a concave mirror. A real image is formed at 40 cm from the mirror. Calculate the focal length of the mirror. Also, find the height of the image formed.

8. Consider the following elements: Na, Ca, Al, K, Mg, C and Li. (3)
(a) Which of these elements belong to the 2nd period of the modern periodic table?
(b) Which of these elements belong to Group 2 of the modern periodic table?
(c) Which of these elements show a valency of +1?

9.
(a) Define power.
(b) What is the SI unit of power?
(c) What is the commercial unit of electrical energy?

10. (3)
(a) If a purple-flowered pea plant (PP) is crossed with a white-flowered pea plant (pp), will we have white-flowered pea plants in the F_1 generation? Explain.
(b) What do you mean by dominant and recessive traits?

11. (3)
(a) How does *Archaeopteryx* serve as a connecting link between birds and reptiles?
(b) What do you mean by the term evolution?

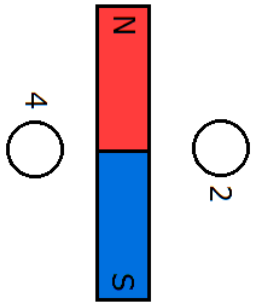
12. (3)
(a) Write the chemical name and formula of washing soda. How is it prepared? Write the chemical equation of the reaction.
(b) Why does distilled water not conduct electricity, whereas rainwater does?

OR

(a) Five solutions A, B and C when tested with a universal indicator showed corresponding pH values of 4, 1 and11. Which solution is
(i) Strongly alkaline
(ii) Strongly acidic
(iii) Weakly acidic

(b) Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, while acetic acid (CH_3COOH) is added to test tube B. In which test tube will fizzing occur more vigorously and why?

13. The diagram below shows a bar magnet surrounded by two compasses numbered 2 and 4. What directions will these compasses show? (3)



14. Give the name and formula of an ore of zinc and reactions involved in the following steps:
(a) Roasting of the ore
(b) Reduction of the zinc compound which is the product of the above reaction.
(c) State one large scale use of zinc. (3)

15. Gold is a very precious metal. Pure gold is very soft it is therefore not suitable for making jewellery. It is alloyed with either silver or copper to make it hard. But sometimes jewellers mix a large quantity of copper and silver in gold to earn more profit. (3)

i. What precautions should you take while purchasing gold jewellery?
ii. Why does the government insist on purchasing hallmarked jewellery?

SECTION D

16. In order to study the properties of the acid HCl, a student added dilute HCl to a test tube containing a compound X. As a result a colourless and odourless gas evolved; it also turned lime water milky. What could be compound X? Name the gas formed. What would happen on passing the gas in excess of lime water? (5)

17. (5)

(a) Write the three main steps which take place in chloroplasts during photosynthesis.

(b) How does stomata open and close?

(c) Which raw material is made available to the plants for photosynthesis when the stomata are open?

18. Draw a ray diagram for the following positions of the object placed in front of a convex lens: (5)

(a) Between the pole of the mirror and F

(b) Between F and 2F

(c) At 2F

(d) What will be the nature of the image for the convex and concave lenses for cases (i) and (ii)?

19. (5)

(a) Define and derive the Joule's law of heating.

(b) Compare the heat produced when two identical resistors of resistance 'R' with a potential difference of 'V' for time 't' are connected in a

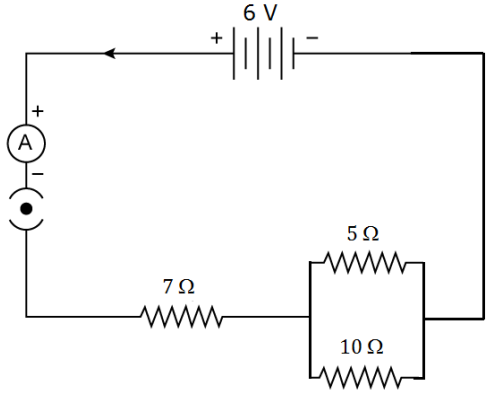
(i) Series combination

(ii) Parallel combination

OR

(a) Derive the expression for equivalent resistance if three resistors R_1, R_2 and R_3 are connected in a parallel combination.

(b) From the following electric circuit:



Calculate:

(i) Resultant resistance and current

(ii) Heat energy evolved when the circuit is switched on for 30 minutes.

20. (5)

(a) Write two points of difference in the structures of diamond and graphite.

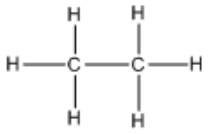
(b) Explain why graphite can be used as a lubricant but diamond cannot.

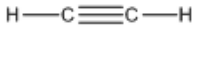
(c) State the two properties of carbon which led to the huge number of carbon compounds.

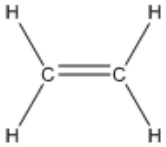
(d) Both carbon and silicon belong to Group 14 of the periodic table.
But the tendency to exhibit catenation in carbon is much more than silicon.Explain.

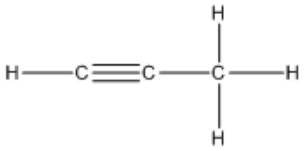
OR

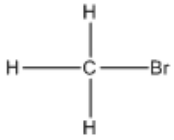
A to F are the structural formulae of some organic compounds:

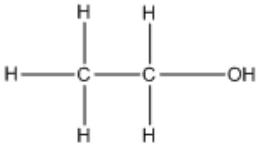

'A'


'B'


'C'


'D'


'E'


'F'

(a) Which of these compounds represent the same family?

(b) Which of these do not represent any hydrocarbon?

(c) How can compound 'C' be converted to compound 'A'?

21. (5)

(a) List any two advantages of vegetative propagation.

(b) Diagrammatically explain the process of reproduction in *Amoeba*.

(c) Where does fertilisation occur in the female reproductive tract?

OR

(a) What happens if an egg is not fertilised?

(b) Why do we need to adopt contraceptive measures?

(c) Name one bacterial and one viral sexually transmitted disease.

(d) How does the embryo get nourishment inside the mother's body?

SECTION E

22. What would a well-stained leaf peel preparation show when viewed under a high power of the microscope? (2)

23. A student was asked to take a reading of voltage and current in a simple circuit that included two resistors connected in parallel and one resistor connected in series. Name the devices used to measure voltage and current, and mention how they should be connected in the circuit. (2)

24. In an experiment, the image formed by a concave mirror is real and that of the convex mirror is virtual. What should be the position of the screen for both mirrors? (2)

OR

An illuminated object is placed at a distance of 20 cm from converging lens of focal length 15 cm. What is the nature of image obtained on the screen? State whether the image formed is magnified or diminished.

25.

(a) What is the colour of ferrous sulphate crystals? How does this colour change after heating?

(b) Name the product formed on strongly heating ferrous sulphate crystals. What type of chemical reaction occurs in this change? (2)

26. What is meant by the term pH of a solution? The pH values of rainwater collected from two cities A and B corresponded to 6 and 5. Water of which city is more acidic? (2)

OR

A baker found that the cake prepared by him is hard and small in size. Which ingredient has he forgotten to add which would have caused the cake to rise and become light?

27. Rohan wanted to observe the different parts of a dicot embryo. (2)

(a) List two seeds which he can use for observation.

(b) How many cotyledons are present in a dicot embryo?

OR

Which seeds are said to be non-endospermic—monocot or dicot? Why?