

CBSE EXAMINATION PAPER-2024

SCIENCE

(Solved)

Time allowed : 3 hours

Maximum Marks : 36

General Instructions :

Read the following instructions carefully and follow them :

- i. This question paper contains **24 questions**. All questions are **compulsory**.
- ii. This question paper is divided into **4 sections**.
- iii. **Section A** – questions number **1 to 12** are multiple choice questions Each question carries **1 marks**.
- iv. **Section B** – questions number **13 to 18** are very short answer Each question carries **2 marks**.
- v. **Section C** – questions number **19 to 22** are short answer Each question carries **3 marks**.
- vi. **Section D** – questions number **23 to 24** are case based questions
- vii. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.
- viii. Use of calculator is NOT allowed.

Section A

Question 1.

A metal and a non-metal that exists in liquid state at the room temperature are respectively:

[1 Marks]

(A) Bromine and Mercury

(B) Mercury and Bromine

(C) Iodine and Mercury

(D) Mercury and Iodine

Question 2.

Carbon compounds:

(i) are good conductors of electricity.

(ii) are bad conductors of electricity.

(iii) have strong forces of attraction between their molecules.

(iv) have weak forces of attraction between their molecules.

The correct statements are:

[1 Marks]

(A) (i) and (ii)

(B) (ii) and (iii)

(C) (i) and (iii)

(D) (ii) and (iv)

Question 3.

Consider the following compounds:

FeSO_4 , CuSO_4 , CaSO_4 , Na_2CO_3

The compound having maximum number of waters of crystallization in its crystalline form in one molecule is:

[1 Marks]

(A) Na_2CO_3

(B) CuSO_4

(C) CaSO_4

(D) FeSO_4

Question 4. Oxides of aluminium and zinc are:

[1 Marks]

- (A) basic
- (B) acidic
- (C) amphoteric
- (D) neutral

Question 5.



The reaction given above is a redox reaction because in this case:

[1 Marks]

- (A) MnO_2 is reduced and HCl is oxidised.
- (B) HCl is oxidised.
- (C) MnO_2 is reduced.
- (D) MnO_2 is oxidised and HCl is reduced.

Question 6.

Chromosomes:

- (i) carry hereditary information from parents to the next generation.
- (ii) are thread-like structures located inside the nucleus of an animal cell.
- (iii) always exist in pairs in human reproductive cells.
- (iv) are involved in the process of cell division. The correct statements are:

[1 Marks]

- (A) (i) and (ii)
- (B) (iii) and (iv)
- (C) (i), (ii) and (iv)
- (D) (i) and (iv)

Question 7. In a nerve cell, the site where the electrical impulse is converted into a chemical signal is known as:

[1 Marks]

(A) Axon

(B) Dendrites

(C) Neuromuscular junction

(D) Cell body

Question 8. At what distance from a convex lens should an object be placed to get an image of the same size as that of the object on a screen?

[1 Marks]

(A) Beyond twice the focal length of the lens.

(B) At twice the focal length of the lens.

(C) At the principal focus of the lens

(D) Between the optical centre of the lens and its principal focus.

Question 9. The lens system of human eye forms an image on a light sensitive screen, which is called as:

[1 Marks]

(A) Cornea

(B) Ciliary muscles

(C) Optic nerves

(D) Retina

Question 10. The pattern of the magnetic field produced inside a current carrying solenoid is:

[1 Marks]

(A)

(B)

(C)

(D)

Question 11. Identify the food chain in which the organisms of the second trophic level are missing:

[1 Marks]

- (A) Grass, goat, lion
- (B) Zooplankton, Phytoplankton, small fish, large fish
- (C) Grasshopper, grass, snake, frog, eagle
- (D) Tiger, grass, snake, frog

Question 12. In which of the following organisms, multiple fission is a means of asexual reproduction? a) (b) (c) (d)

[1 Marks]

- (A) Yeast
- (B) Paramecium
- (C) Leishmania
- (D) Plasmodium

Section B

Question 13. Name the type of chemical reaction in which calcium oxide reacts with water. Justify your answer by giving balanced chemical equation for the chemical reaction.

[2 Marks]

Question 14. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position of the image formed by the mirror.

[2 Marks]

Question 15.

How is the movement of leaves of a sensitive plant different from the downward movement of the roots?

[2 Marks]

Question 16.

There is a hormone which regulates carbohydrate, protein and fat metabolism in our body. Name the hormone and the gland which secretes it. Why is it important for us to have iodised salt in our diet?

[2 Marks]

Question 17.

In the given circuit calculate the power consumed in watts in the resistor of $2\ \Omega$:

[2 Marks]

Question 18.

(i) Two magnetic field lines do not intersect each other. Why?

(ii) How is a uniform magnetic field in a given region represented? Draw a diagram in support of your answer.

[2 Marks]

Section C

Question 19.

(i) The pH of a sample of tomato juice is 4.6. How is this juice likely to be in taste? Give reason to justify your answer.

(ii) How do we differentiate between a strong acid and a weak base in terms of ion-formation in aqueous solutions ?

(iii) The acid rain can make the survival of aquatic animals difficult. How?

[3 Marks]

Question 20. Define reflex action. With the help of a flow chart, show the path of a reflex action such as sneezing.

[3 Marks]

Question 21.

A gas 'X' which is a deadly poison is found at the higher levels of the atmosphere and performs an essential function.

Name the gas and write the function performed by this gas in the atmosphere. Which chemical is linked to the decrease in the level of this gas? What measures have been taken by an international organization to check the depletion of the layer containing this gas?

[3 Marks]

Question 22.

Name and state the rule to determine the direction of a:

- (i) magnetic field produced around a current carrying straight conductor.
- (ii) force experienced by a current carrying straight conductor placed in a magnetic field which is perpendicular to it.

[3 Marks]

Section D

Question 23.

Mendel worked out the rules of heredity by working on garden pea using a number of visible contrasting characters. He conducted several experiments by making a cross with one or two pairs of contrasting characters of pea plant. On the basis of his observations he gave some interpretations which helped to study the mechanism of inheritance.

(1)

When Mendel crossed pea plants with pure tall and pure short characteristics to produce F_1 progeny, which two observations were made by him in F_1 plants?

[1 Marks]

(2) Write one difference between dominant and recessive trait.

[1 Marks]

(3)

In a cross with two pairs of contrasting characters

Mendel observed 4 types of combinations in F_2 generation. By which method did he obtain F_2 generation? Write the ratio of the parental combinations obtained and what conclusions were drawn from this experiment.

[2 Marks]

(4)

Justify the statement:

"It is possible that a trait is inherited but may not be expressed."

[2 Marks]

Question 24. Study the data showing the focal length of three concave mirrors A, B, and C and the respective distances of objects placed in front of the mirrors.

(1) List two properties of the image formed in case 2.

[1 Marks]

(2) In which one of the above cases will the mirror form a diminished image of the object? Justify your answer.

[1 Marks]

(3) What is the nature and size of the image formed by mirror C? Draw a ray diagram to justify your answer.

[2 Marks]

(4)

An object is placed at a distance of 18 cm from the pole of a concave mirror of focal length 12 cm. Find the position of the image formed in this case.

[2 Marks]