CBSE EXAMINATION PAPER-2025

SCIENCE

(Solved)

Time allowed : 3 hours | Maximum Marks : 90

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains **45 questions.** All questions are **compulsory.**

ii. This question paper is divided into **5 sections.**

iii. **Section A** – questions number **1 to 3** are case based questions

iv. **Section B** – questions number **4 to 23** are multiple choice questions

v. **Section C** – questions number **24 to 31** are very short answer

vi. **Section D** – questions number **32 to 39** are short answer

vii. **Section E** – questions number **40 to 45** are long answer

viii. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.

ix. Use of calculator is NOT allowed.

Section A

Question 1. Seawater contains many salts dissolved in it. Common salt is separated from these salts. Deposits of solid salt are also found in several parts of the world. These large crystals are often brown due to impurities. This is called rock salt and is mined like coal. The common salt is an important raw material for chemicals of daily use.

(1) Write balanced chemical equations to show the products formed during electrolysis of brine.

[1 Marks]

(2)

A mild non-corrosive basic salt ‘A’, used for faster cooking, is strongly heated to produce a compound ‘B’, that is used for removing permanent hardness of water. Identify A and B and also write the equation for the reaction that occurs when A is heated.

[2 Marks]

(3) List two uses of any one product obtained during electrolysis of brine.

[1 Marks]

(4)

Define water of crystallisation. Give two examples of salts that have water of crystallisation.

[2 Marks]

Question 2. The maintenance functions of all living organisms must go on even when they are not doing anything particular. Even when we are just sitting in a class or even asleep, this maintenance job has to go on. These maintenance processes require energy to prevent damage and break-down of cells and tissues, which is obtained by the individual organism from the food prepared by the autotrophs, called producers.

(1) Name and define the process by which green plants prepare food.

[1 Marks]

(2)

State in proper sequence the events that occur in synthesis of food by desert plants.

[2 Marks]

(3) Write the chemical equation involved in the above process.

[1 Marks]

(4)

Explain giving reasons what happens to the rate at which the green plants will prepare food

(I) during cloudy weather, and

(II) when stomata get blocked due to dust.

[2 Marks]

Question 3.

In our homes, we receive the supply of electric power through a main supply also called mains, either supported through overhead electric poles or by underground cables. In our country the potential difference between the two wires (live wire and neutral wire) of this supply is 220 V.

(1)

Write the colours of the insulation covers of the line wires through which supply comes to our homes.

[1 Marks]

(2)

What should be the current rating of the electric circuit (220 V) so that an electric iron of 1 kW power rating can be operated ?

[1 Marks]

(3)

List two precautions to be taken to avoid electrical accidents. State how these precautions prevent possible damage to the circuit/appliance.

[2 Marks]

(4)

What is the function of the earth wire ? State the advantage of the earth wire in domestic electric appliances such as electric iron.

[2 Marks]

Section B

Question 4.

Electrolysis of water is a decomposition reaction. The mass ratio ($M_H : M_O$) of hydrogen and oxygen gases liberated at the electrodes during electrolysis of water is:

[1 Marks]

(A) 8 : 1

(B) 1 : 2

(C) 1 : 8

(D) 2 : 1

Question 5.

The products formed when Aluminium and Magnesium are burnt in the presence of air respectively are:

[1 Marks]

(A) Al_3O_4 and MgO

(B) Al_2O_3 and MgO

(C) Al_2O_3 and MgO_2

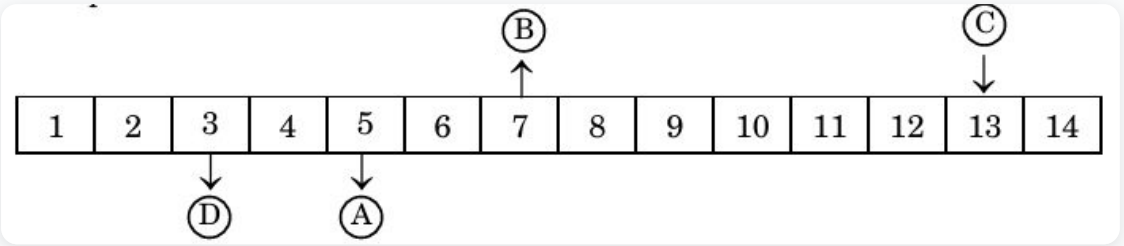
(D) Al_3O_4 and MgO_2

Question 6.

The following table shows the pH values of four solutions A, B, C and D on a pH scale:

The solutions A, B, C and D respectively are of a

[1 Marks]



(A) Weak acid, neutral, strong base, strong acid

(B) Weak acid, neutral, strong base, weak base

(C) Weak acid, neutral, weak base, strong base

(D) Strong acid, weak acid, neutral, strong base

Question 7.

Consider the following reactions:

(i) Dilute hydrochloric acid reacts with sodium hydroxide.

(ii) Magnesium oxide reacts with dilute hydrochloric acid.

(iii) Carbon dioxide reacts with sodium hydroxide.

It is found that in each case:

[1 Marks]

(A) Salt and water is formed.

(B) Neutral salts are formed.

(C) Hydrogen gas is formed.

(D) Acidic salts are formed.

Question 8.

Reaction between two elements A and B forms a compound C. A loses electrons and B gains electrons. Which one of the following properties will **not** be shown by compound C?

[1 Marks]

(A) It has weak electrostatic forces of attraction between its oppositely charged ions.

(B) It has high melting point.

(C) It is highly soluble in water.

(D) It conducts electricity in its molten state or aqueous solution.

Question 9.

The metals obtained from their molten chlorides by the process of electrolytic reduction are:

[1 Marks]

(A) Calcium and magnesium

(B) Sodium and iron

(C) Aluminium and silver

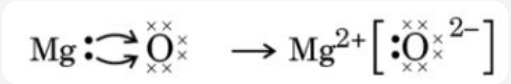
(D) Gold and silver

Question 10.

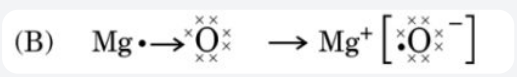
The formation of magnesium oxide is correctly shown in option:

[1 Marks]

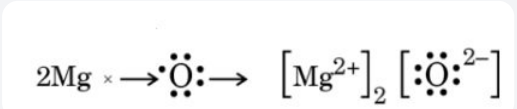
(A)



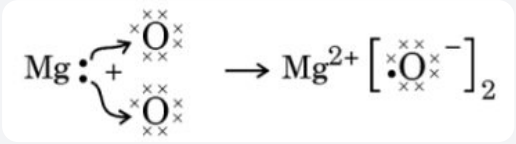
(B)



(C)



(D)



Question 11. Secretion of less saliva in the mouth will affect the conversion of:

[1 Marks]

(A) Fats into fatty acids and glycerol

(B) Proteins into amino acids

(C) Starch into simple sugars

(D) Sugars into alcohol

Question 12. The plant hormone whose concentration stimulates the cells to grow longer on the side of the shoot which is away from light is:

[1 Marks]

(A) Cytokinins

(B) Gibberellins

(C) Auxins

(D) Adrenaline

Question 13.

The correct/true statement(s) for a bisexual flower is/are:

(i) They possess both stamen and pistil.

(ii) They possess either stamen or pistil.

(iii) They exhibit either self-pollination or cross-pollination.

(iv) They cannot produce fruits on their own.

[1 Marks]

(A) (i) and (iii)

(B) (i) only

(C) (iv) only

(D) (i) and (iv)

Question 14.

If pea plants with round and green seeds (RRyy) are crossed with pea plants having wrinkled and yellow seeds (rrYY), the seeds developed by the plants of F_1 generation will be:

[1 Marks]

(A) 75% wrinkled and yellow

(B) 100% round and yellow

(C) 50% round and green

(D) 75% wrinkled and green

Question 15. The breakdown of glucose has taken the following pathway: Glucose (a) → Pyruvate + Energy (b) → Lactic acid + Energy. The sites 'a' and 'b' respectively are:

[1 Marks]

(A) Mitochondria and Oxygen deficient muscle cells

(B) Cytoplasm and Yeast cells

(C) Cytoplasm and Oxygen rich muscle cells

(D) Cytoplasm and Oxygen deficient muscle cells

Question 16.

Mirror ‘X’ is used to concentrate sunlight in solar furnace and Mirror ‘Y’ is fitted on the side of the vehicle to see the traffic behind the driver. Which of the following statements are true for the two mirrors ?

(i) The image formed by mirror ‘X’ is real, diminished and at its focus.

(ii) The image formed by mirror ‘Y’ is virtual, diminished and erect.

(iii) The image formed by mirror ‘X’ is virtual, diminished and erect.

(iv) The image formed by mirror ‘Y’ is real, diminished and at its focus.

[1 Marks]

(A) (ii) and (iii)

(B) (iii) and (iv)

(C) (i) and (iv)

(D) (i) and (ii)

Question 17. An old person is suffering from an eye defect caused by weakening of ciliary muscles and diminishing flexibility of the eye lens. If the defect of vision is 'a' which can be corrected by lens 'b', then 'a' and 'b' respectively are:

[1 Marks]

(A) Hypermetropia and convex lens

(B) Myopia and concave lens

(C) Presbyopia and bifocal lens

(D) Myopia and bifocal lens

Question 18.

Which of the following groups do not constitute a food chain?

(i) Wolf, rabbit, grass, lion

(ii) Plankton, man, grasshopper, fish

(iii) Hawk, grass, snake, grasshopper, frog

(iv) Grass, snake, wolf, tiger

[1 Marks]

(A) (ii) and (iv)

(B) (ii) and (iii)

(C) (i) and (iii)

(D) (i) and (iv)

Question 19.

The percentage of solar energy which is not converted into food energy by the leaves of green plants in a terrestrial ecosystem is about:

[1 Marks]

(A) 90%

(B) 10%

(C) 1%

(D) 99%

Question 20.

Assertion (A): Decomposition reactions are generally endothermic reactions.

Reason (R): Decomposition of organic matter into compost is an exothermic process.

[1 Marks]

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Assertion (A) is false, but Reason (R) is true.

(C) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(D) Assertion (A) is true, but Reason (R) is false.

Question 21.

Assertion (A): A human child bears all the basic features of human beings.

Reason (R): It looks exactly like its parents, showing very little variations.

[1 Marks]

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Assertion (A) is false, but Reason (R) is true.

(C) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(D) Assertion (A) is true, but Reason (R) is false.

Question 22.

Assertion (A): No two magnetic field lines are found to cross each other.

Reason (R): The compass needle cannot point towards two directions at the point of intersection of two magnetic field lines.

[1 Marks]

(A) Assertion (A) is false, but Reason (R) is true.

(B) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

Question 23.

Assertion (A): The amount of ozone in the atmosphere began to drop sharply in the 1980s.

Reason (R): The oxygen atoms combine with molecular oxygen to form ozone.

[1 Marks]

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Assertion (A) is true, but Reason (R) is false.

(C) Assertion (A) is false, but Reason (R) is true.

(D) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

Section C

Question 24. Draw labelled diagrams to show different stages of budding in Hydra.

[2 Marks]

Question 25. Besides minimising the loss of blood, why is it essential to plug any leak in a blood vessel? Name the component of blood which helps in this process and state how this component performs this function.

[2 Marks]

Question 26. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm. Use lens formula to find the position of the image formed in this case.

[2 Marks]

Question 27. Define electric power. When do we say that the power consumed in an electric circuit is 1 watt?

[2 Marks]

Question 28. 'Excessive use of chemicals and pesticides in agriculture adversely effect the environment.' Justify this statement.

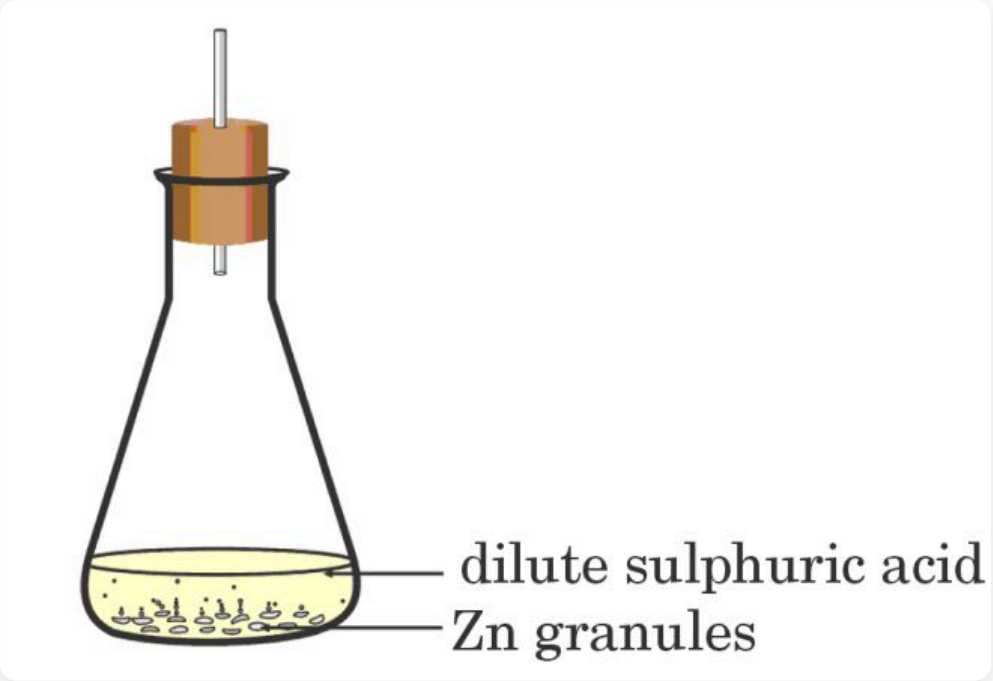
[2 Marks]

Question 29.

A student performs the following experiment in his school laboratory.

List two observations to justify that in this experiment a chemical change has taken place.

[2 Marks]



Question 30.

(i) The transport system in plants is relatively slower than in animals. Give reasons.

(ii) State the role of phloem in the transport of materials in plants.

[2 Marks]

Question 31.

A wire of resistance R is cut into three equal parts. If these three parts are then joined in parallel, calculate the total resistance of the combination so formed.

[2 Marks]

Section D

Question 32.

(a) ‘‘Displacement reactions also play a key role in extracting metals in the middle of the reactivity series.’’ Justify this statement with two examples.

(b) Why can metals high up in the reactivity series not be obtained by reduction of their oxides by carbon ?

[3 Marks]

Question 33. With the help of an activity, explain the conditions under which iron articles get rusted.

[3 Marks]

Question 34.

Plants have neither a nervous system nor muscles, even then they respond to stimuli. For example, the leaves of chhui-mui (touch-me-not) plant when touched begin to fold up and droop.

(a) How is the information communicated in ‘‘touch-me-not’’ plants ?

(b) What enables the plant cells to bring out the observable response ?

(c) Differentiate the movement mentioned above from the movement of tendrils in a pea plant.

[3 Marks]

Question 35.

(a) What are chromosomes ?

(b) Explain in brief how stability of DNA content of a species is ensured in sexually reproducing organisms ?

[3 Marks]

Question 36.

Draw ray diagrams to show the nature, position and relative size of the image formed by a convex mirror when the object is placed

(i) at infinity and

(ii) between infinity and pole P of the mirror.

[3 Marks]

Question 37.

Consider the following electric circuit :

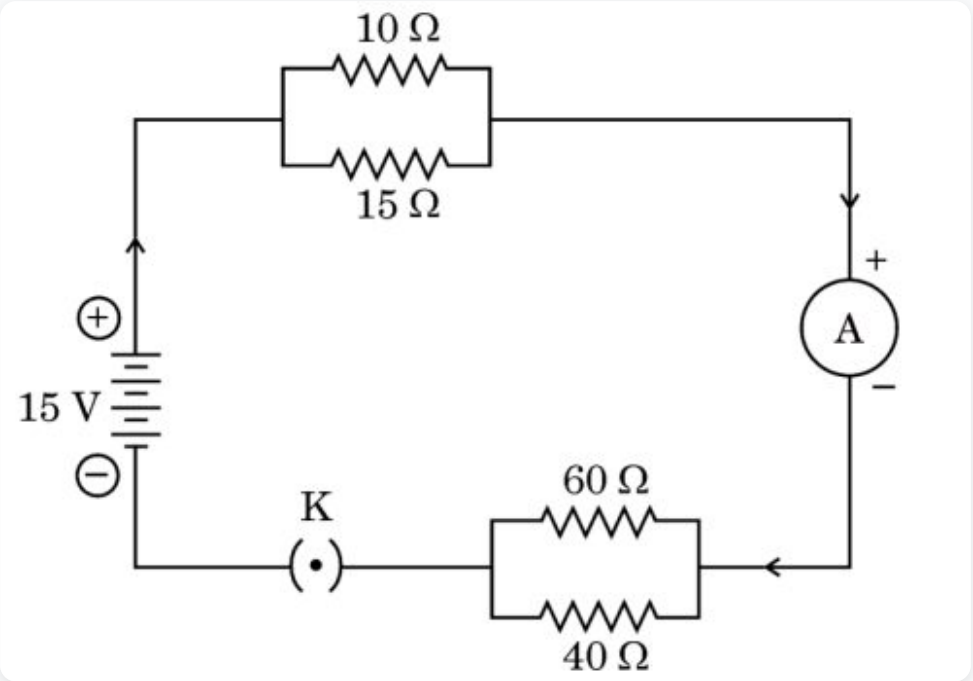
Calculate the values of the following :

(a) The total resistance of the circuit

(b) The total current drawn from the source

(c) potential difference across the parallel combination of 10 Ω and 15 Ω resistors

[3 Marks]



Question 38.

(a) Write the relationship between resistivity and resistance of a cylindrical conductor of length l and area of cross-section A. Hence derive the SI unit of resistivity.

(b) Why are alloys used in electrical heating devices ?

[3 Marks]

Question 39.

(i) Name two metals which react violently with cold water. List any three observations which a student notes when these metal are dropped in a beaker containing water.

(ii) Write a test to identify the gas evolved (if any) during the reaction of these metals with water.

[3 Marks]

Section E

Question 40.

(i) Draw two isomeric structures of Butene (C_4H_8).

(ii) Name the following compounds :

(I) structure 1,

(II) structure 2.

(iii) Write the chemical equations for the following reactions. Mention one essential condition each for these reactions to take place.

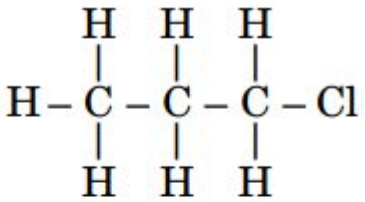
(I) Ethanol undergoes complete oxidation

(II) Propene undergoes hydrogenation

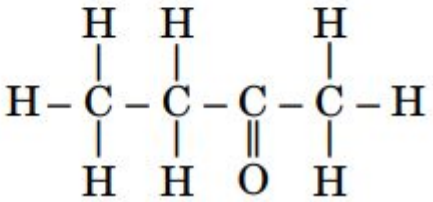
(III) Ethanoic acid reacts with ethanol

[5 Marks]

(I)



(II)



Question 41.

(i) Write the functions of the following parts of the human female reproductive system:

(I) Ovary,

(II) Fallopian tube,

(III) Uterus.

(ii) State briefly two contraceptive methods used by human males.

[5 Marks]

Question 42.

(i) The power of a lens 'X' is – 2·5 D. Name the lens and determine its focal length in cm. For which eye defect of vision will an optician prescribe this type of lens as a corrective lens ?

(ii) ''The value of magnification 'm' for a lens is – 2.'' Using new Cartesian Sign Convention and considering that an object is placed at a distance of 20 cm from the optical centre of this lens, state :

(I) the nature of the image formed;

(II) size of the image compared to the size of the object;

(III) position of the image, and

(IV) sign of the height of the image.

(iii) The numerical values of the focal lengths of two lenses A and B are 10 cm and 20 cm respectively. Which one of the two will show higher degree of convergence/divergence ? Give reason to justify your answer.

[5 Marks]

Question 43.

(i) A carbon compound X is a good solvent. On reaction with sodium, X forms two products Y and Z. Z is used to convert vegetable oil into vegetable ghee. Identify and name X, Y and Z. Also write the equation of reaction of X with sodium to justify your answer.

(ii) Write chemical equation to show what happens when ethanol :

(I) burns in oxygen/air.

(II) is heated at 443 K in excess conc. H_2SO_4.

(III) reacts with acidified potassium dichromate.

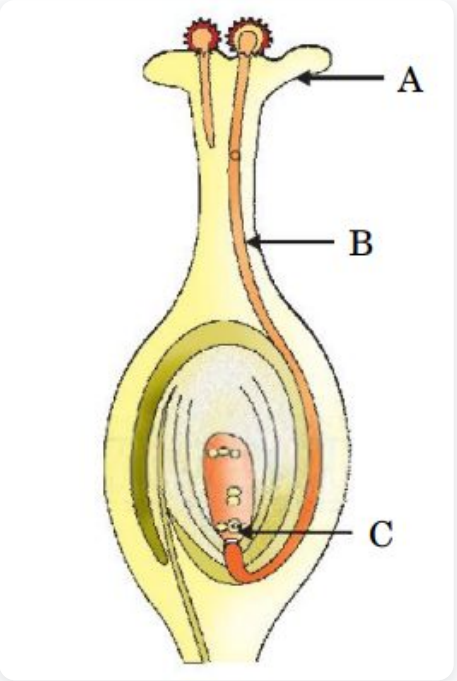
[5 Marks]

Question 44.

(i) Differentiate between self-pollination and cross-pollination.

(ii) Identify A, B and C in the diagram given below and write one function of each.

[5 Marks]



Question 45.

(i) Draw a ray diagram to show the refraction of a ray of light through a rectangular glass slab when it falls obliquely from air into glass.

(ii) State Snell's law of refraction of light.

(iii) Differentiate between the virtual images formed by a convex lens and a concave lens on the basis of :

(I) object distance, and

(II) magnification.

[5 Marks]