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. Common salt is a very important chemical compound for our daily life. Its chemical name is sodium chloride and it is used as a raw material in the manufacture of caustic soda, washing soda, baking soda etc. It is also used in the preservation of pickles, butter, meat etc.

(1) Name the acid and the base from which common salt can be obtained.

[1 Marks]

(2)

State the nature (acidic/basic/neutral) of sodium chloride. Give reason for the justification for your answer.

[1 Marks]

(3)

What happens when electric current is passed through an aqueous solution of sodium chloride (called brine)? Name the products obtained along with the corresponding places in the electrolytic cell where each of these products is obtained.

[2 Marks]

(4)

How is washing soda obtained from sodium chloride? Give the chemical equations of the reactions involved in the process.

[2 Marks]

Question 2.

In life there are certain changes in the environment called ‘stimuli’ to which we respond appropriately. Touching a flame suddenly is a dangerous situation for us. One way is to think consciously about the possibility of burning and then moving the hand. But our body has been designed in such a way that we save ourself from such situations immediately.

(1) Write the role of (a) motor and (b) relay neuron.

[1 Marks]

(2) Name the action by which we protect ourselves in the situation mentioned above and define it.

[1 Marks]

(3)

Which part of the human brain is responsible for

(a) thinking

(b) picking up a pencil

(c) controlling blood pressure

(d) controlling hunger?

[2 Marks]

(4)

What are the two types of nervous system in the human body? Name the components of each of them.

[2 Marks]

Question 3.

The students in a class took a thick sheet of cardboard and made a small hole in its centre. Sunlight was allowed to fall on this small hole and they obtained a narrow beam of white light. A glass prism was taken and this white light was allowed to fall on one of its faces. The prism was turned slowly until the light that comes out of the opposite face of the prism appeared on the nearby screen. They studied this beautiful band of light and concluded that it is a spectrum of white light.

(1)

List two conditions necessary to observe a rainbow.

[2 Marks]

(2) What happens to white light in the above case?

[1 Marks]

(3) Give any one more instance in which this type of spectrum is observed.

[1 Marks]

(4)

Draw a ray diagram to show the formation of a rainbow. Mark on it, points (a), (b) and (c) as given below :

(a) where dispersion of light occurs,

(b) where light gets reflected internally,

(c) where final refraction occurs.

[2 Marks]

Section B

Question 4.

In which one of the following situations a chemical reaction does not occur?

[1 Marks]

(A) Grapes get fermented

(B) Milk left open at room temperature during summer

(C) An iron nail is left exposed to humid atmosphere

(D) Melting of glaciers

Question 5.

In order to prepare dry hydrogen chloride gas in humid atmosphere the gas produced is passed through a guard tube (drying tube) which contains:

[1 Marks]

(A) Calcium carbonate

(B) Calcium hydroxide

(C) Calcium chloride

(D) Calcium oxide

Question 6. The property by virtue of which solid material can be drawn into thin wire is called:

[1 Marks]

(A) Malleability

(B) Ductility

(C) Resistivity

(D) Rigidity

Question 7.

Select from the following a hydrocarbon having one C–C bond and one C≡C bond:

[1 Marks]

(A) Butyne

(B) Benzene

(C) Cyclohexane

(D) Propyne

Question 8. The essential element taken up from the soil by the plants to synthesize proteins is:

[1 Marks]

(A) Iron

(B) Nitrogen

(C) Phosphorus

(D) Magnesium

Question 9.

Select TRUE statements about lymph from the following :

A. Lymph vessels carry lymph through the body and finally open into larger arteries.

B. Lymph contains some amount of plasma, proteins and blood cells.

C. Lymph contains some amount of plasma, proteins and red blood cells.

D. Lymph vessels carry lymph through the body and finally open into larger veins.

[1 Marks]

(A) C and D

(B) A and B

(C) A and C

(D) B and D

Question 10.

Plants like rose and banana have lost the capacity to produce :

[1 Marks]

(A) fruits

(B) seeds

(C) flowers

(D) buds

Question 11.

Ina bisexual flower the male gametes are present in the :

[1 Marks]

(A) anther

(B) filament

(C) ovary

(D) stigma

Question 12.

When a pure-tall pea plant is crossed with a pure-dwarf pea plant, the percentage of tall pea plants in F_1, and F_2, generation pea plants will be respectively:

[1 Marks]

(A) 100% ; 50%

(B) 100% ;100%

(C) 100% ; 25%

(D) 100% ; 75%

Question 13.

To get an image of magnification —1 on a screen using a lens of focal length 20 cm, the object distance must be :

[1 Marks]

(A) Less than 20 cm

(B) 40 cm

(C) 80 cm

(D) 30 cm

Question 14.

An optical device ‘X’ is placed obliquely in the path of a narrow parallel beam of light. If the emergent beam gets displaced laterally, the device ‘X’ is:

[1 Marks]

(A) glass prism

(B) plane mirror

(C) convex lens

(D) glass slab

Question 15.

A piece of wire of resistance ‘R’ is cut lengthwise into three identical parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R’, then the value of R/R’ is :

[1 Marks]

(A) 1

(B) 9

(C) 1/3

(D) 1/9

Question 16.

An electric bulb is rated 220 V; 11W. The resistance of its filament when it glows with a power supply of 220 V is :

[1 Marks]

(A) 4400 Ω

(B) 20 Ω

(C) 440 Ω

(D) 400 Ω

Question 17.

The minimum number of identical bulbs of rating 4V; 6W, that can work safely with desired brightness, when connected in series with a 240 V mains supply is :

[1 Marks]

(A) 20

(B) 40

(C) 60

(D) 80

Question 18.

In the food chains given below. Select the most efficient food chain in terms of energy :

[1 Marks]

(A) Phytoplankton → Zooplankton → Small Fish → Big Fish

(B) Plants → Deer → Lion

(C) Plants → Man

(D) Grass → Grasshopper → Frog → Snake

Question 19.

Which one of the following gets biomagnified at different levels in a food chain ?

[1 Marks]

(A) Manure

(B) DDT

(C) Carbon monoxide

(D) CFC's

Question 20.

Assertion (A): In large animals, oxygen can reach different parts of the animal's body easily.

Reason (R): Respiratory pigments take up oxygen from the air and carry it to body tissues.

[1 Marks]

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

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

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

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

Question 21.

Assertion (A): In reptiles, the temperature at which the fertilized eggs are kept decides the sex of the offsprings.

Reason (R): Sex is not genetically determined in some animals.

[1 Marks]

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

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

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

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

Question 22.

Assertion (A): When ciliary muscles contract, eye lens becomes thin.

Reason (R): — Ciliary muscles control the power of the eye lens.

[1 Marks]

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

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

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

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

Question 23.

Assertion (A): Concentrated nitric acid is diluted by adding water slowly to acid with constant stirring.

Reason (R): Concentrated nitric acid is easily soluble in water.

[1 Marks]

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

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

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

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

Section C

Question 24.

Define oxidation. Identify and name the substance oxidized in the following reaction:

$CuO + H_2 \rightarrow Cu + H_2O$

[2 Marks]

Question 25.

Show the formation of magnesium chloride by electron transfer. Write the name of the cation and anion present in the compound formed. (Atomic Number of Mg = 12, Cl = 17)

[2 Marks]

Question 26. 'Plants use a variety of techniques to get rid of waste material.' Justify this statement giving any four ways.

[2 Marks]

Question 27.

Explain with the help of a flow chart that in human beings father is responsible for the sex (male or female) of the child.

[2 Marks]

Question 28. Draw a ray diagram to show the refraction of light passing through an equilateral glass prism. Mark the angle through which the emergent ray bends from the direction of the incident ray and also name it.

[2 Marks]

Question 29. Name the type of lens required by persons for the correction of vision called presbyopia. Write the structure of the lenses commonly used for the correction of this defect, giving reason for such designs.

[2 Marks]

Question 30. What are magnetic field lines? List two important properties of magnetic field lines.

[2 Marks]

Question 31.

How is zinc extracted from its ore? Name the processes involved in the extraction and write chemical equations for the reactions that occur during these processes.

[2 Marks]

Section D

Question 32.

Why do we balance a chemical equation? Name and state the law that suggests the balancing of a chemical equation? Balance the following chemical equation:

$Zn + H_3PO_4 \rightarrow Zn_3(PO_4)_2 + H_2$

[3 Marks]

Question 33. Define a precipitation reaction. Give its example and express the reaction that occurs in the form of a balanced chemical equation.

[3 Marks]

Question 34.

Design an activity to show that metals are good conductors of heat and have high melting points.

[3 Marks]

Question 35.

The digestion of food in human alimentary canal is a complex process. State the enzyme/salt present in the following and mention their function in the process of digestion :

(i) Saliva

(ii) Bile Juice

(iii) Pancreatic Juice

[3 Marks]

Question 36.

State two limitations of electrical impulses in multicellular organisms. Why is chemical communication better than electrical impulses as a means of communication between cells in multicellular organisms?

[3 Marks]

Question 37.

If we want to obtain a virtual and magnified image of an object by using a concave mirror of focal length 18 cm, where should the object be placed? Use mirror formula to determine the object distance

for an image of magnification +2 produced by this mirror to justify your answer.

[3 Marks]

Question 38.

The electrical resistivity of three materials A, B and C at 20°C is given below:

(i) Classify these materials as conductor, alloy and insulator.

(ii) Give one example of each of these materials and state one use of each material in the design of an electrical appliance say an electric stove or an electric iron.

[3 Marks]

Material	Resistivity (Ω m)
A	10^{17}
B	44×10^{-6}
C	1.62×10^{-8}

Question 39.

What are decomposers? Give two examples. State how they maintain a balance in an ecosystem.

[3 Marks]

Section E

Question 40.

A carbon compound 'A' on heating with excess conc. H_2SO_4, forms a compound 'B', which on addition of one mole of hydrogen gas in the presence of nickel catalyst forms a compound 'C'. 'C' on combustion in air forms 2 moles of carbon dioxide and 3 moles of water. Identify 'A', 'B' and 'C' and write their structures. Give chemical equations of the reactions involved. Also state the role of concentrated sulphuric acid in the formation of 'B' from 'A'.

[5 Marks]

Question 41.

A carbon compound 'A' is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'.

(i) Identify the compound 'A' and write its structure.

(ii) Write the chemical equation for the reaction of ‘A’ with ethanol to form compound ‘B’. State the role of presence of an acid in the reaction.

(iii) How can we get compound ‘A’ back from ‘B’ ?

(iv) How can ‘A’ be obtained from ethanol ?

(v) Name the gas produced when compound ‘A’ reacts with washing soda.

[5 Marks]

Question 42.

(i) What is regeneration? Give one example of an organism that shows this process and one organism that does not. Why does regeneration not occur in the latter?

(ii) Water in a pond appears dark green and contains filamentous structures. Name these structures and the method by which they reproduce. Explain the process.

[5 Marks]

Question 43.

(i)Name the part performing following functions in human male reproductive system :

(a) Carries sperm

(b) Production of male gametes

(c) Whose secretion makes the transport of sperms easier

(d) Provide suitable temperature for sperm formation

(ii) Write any two characteristics of sperms.

(iii) What are surgical contraceptive methods? Give the side effect caused by this procedure.

[5 Marks]

Question 44.

(i) Draw the pattern of the magnetic field lines for the two parallel straight conductors carrying current of same magnitude ‘I’ in opposite directions as shown. Show the direction of magnetic field at a point O which is equidistant from the two conductors. (Consider that the conductors are inserted normal to the plane of a rectangular cardboard.)

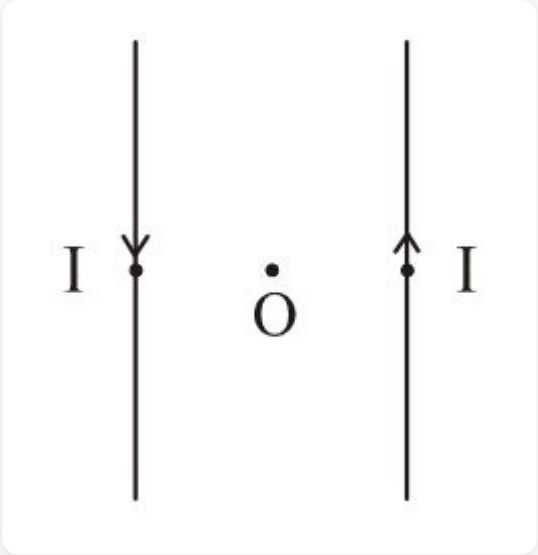
(ii) In our houses we receive A.C. electric power of 220 V. In electric iron or electric heater cables having three wires with insulation of three different colours — red, black and green are used to draw current from the mains.

(a) What are these three different wires called? Name them colourwise.

(b) What is the potential difference between the red wire and the black wire?

(c) What is the role of the wire with green insulation in case of accidental leakage of electric current to the metallic body of an electrical appliance?

[5 Marks]



Question 45.

(i) By using the given experimental set-up. How can it be shown that:

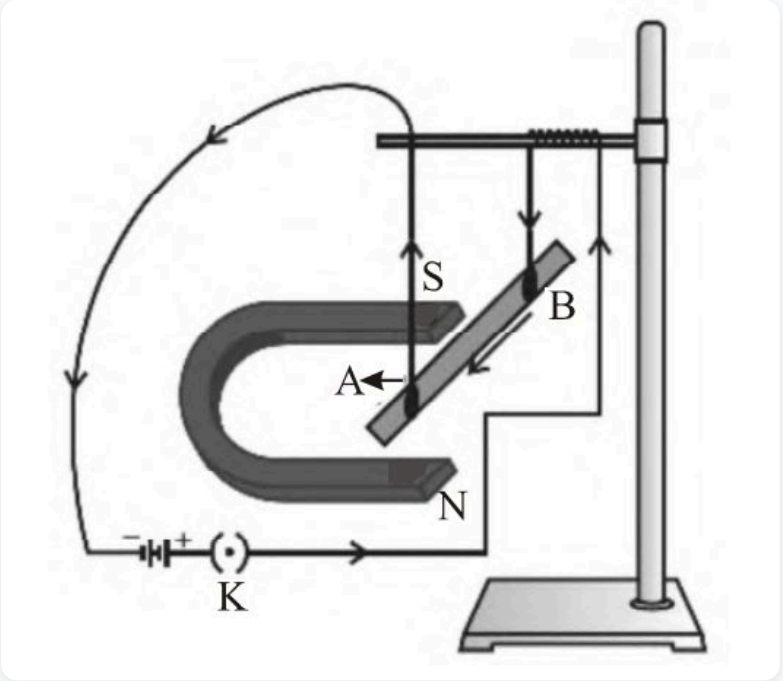
(a) a force is exerted on the current-carrying B conductor AB when it is At placed in a magnetic field.

(b) the direction of force can be reversed in two ways.

(ii) When will the magnitude of the force be highest?

(iii) State Fleming's left hand rule.

[5 Marks]


S
B
A
N
K