2025
EXAMINATION

CBSE
CLASS 10th

PAST 10 YEARS' SOLVED PAPERS
(2024-2015)
Delhi & Outside Delhi

- SCIENCE
- MATHEMATICS (STANDARD)
- SOCIAL SCIENCE
- ENGLISH (LANGUAGE & LITERATURE)

DETAILED EXPLANATIONS WITH STEP-WISE MARKING

- Analysis of Chapter-wise Weightage, Question Typology & Trend Change
- Highlighted rationalised content as per latest NCERT syllabus
- 20 Original CBSE Solved Papers
- Includes Latest SQP & Additional SQP Issued by CBSE

Chapter-wise Weightage and Trend Analysis of

CBSE Past 5 Years' Papers

SCIENCE									
CHAPTERS	**2020**		**2021**	**2022**		**2023**		**2024**	
	DL	**ODL**		**DL**	**ODL**	**DL**	**ODL**	**DL**	**ODL**
Chemical Reactions and Equations	5	7	Exam not Conducted	–	–	8	6	7	7
Acids, Bases and Salts	5	5		–	–	8	10	4	5
Metals and Non-metals	5	5		–	–	4	6	8	7
Carbon and its Compounds	5	7		5	5	7	6	6	6
Periodic Classification of Elements (*Rationalised*)	5	5		5	5	–	–		
Life Processes	5	8		–	–	10	10	5	8
Control and Coordination	3	4		–	–	3	1	6	6
How do Organisms Reproduce?	7	5		6	7	6	5	6	10
Heredity and Evolution (*Some portion is Rationalised*)	8	6		7	6	6	6	6	1
Light – Reflection and Refraction	9	11		–	–	12	9	7	10
The Human Eye and the Colourful World (*Some portion is Rationalised*)	3	4		–	–	2	5	5	2
Electricity (*Some portion is Rationalised*)	7	8		6	6	11	8	7	8
Magnetic Effects of Electric Current (*Some portion is Rationalised*)	6	2		6	6	5	5	6	5
Sources of Energy (*Rationalised*)	1	4		–	–	–	–	–	–
Our Environment	4	3		5	5	5	5	4	5
Sustainable Management of Natural Resources (*Rationalised*)	2	1		–	–	–	–	–	–

MATHEMATICS									
CHAPTERS	**2020**		**2021**	**2022**		**2023**		**2024**	
	DL	**ODL**		**DL**	**ODL**	**DL**	**ODL**	**DL**	**ODL**
Real Number	6	6	Exam not Conducted	–	–	6	6	6	6
Polynomials	8	3		–	–	4	3	3	5
Pair of Linear Equations in Two Variables	4	8		–	–	5	4	6	6
Quadratic Equations	3	7		6	5	6	5	5	4
Arithmetic Progressions	8	5		4	5	5	6	6	5
Triangles	7	7		–	–	7	7	7	8
Coordinate Geometry	6	6		–	–	6	8	6	6
Introduction to Trigonometry	5	7		–	–	6	6	7	7
Some Applications of Trigonometry	7	5		7	7	6	6	5	5
Circles	4	4		6	6	8	8	8	7
Constructions (*Rationalised*)	4	4		3	3	–	–	–	–
Areas Related to Circles	2	5		–	–	5	4	5	–
Surface Areas and Volumes	8	9		6	6	5	6	5	10
Statistics	7	7		8	8	6	5	6	5
Probability	4	4		–	–	5	6	5	6

**The marks allotment mentioned above is chapter-wise and includes internal choice questions as well. Therefore, the total might not match the Maximum Marks of the respective Previous Year Paper. Here, DL is Delhi, ODL is Outside Delhi.*

Question Typology

Science

YEAR	Objective Questions		Subjective Questions			
	MCQs	A/R	VSA	SA	LA	Case-Based type
2024	16	4	6	7	3	3
2023	16	4	6	7	3	3
2022 (Term II)	-	-	7	6	0	2
2022 (Term I)	43	5	-	-	-	12
2021	Exam Not Conducted					
2020	10*	2	7*	10	6	-

** Some paragraph-based MCQs and VSAs were asked in this year.*

Mathematics

YEAR	Objective Questions		Subjective Questions			
	MCQs	A/R	VSA	SA	LA	Case-Based type
2024	18	2	5	6	4	3
2023	18	2	5	6	4	3
2022 (Term-II)			6	3	2	2
2022 (Term-I)	40					2
2021	Exam Not Conducted					
2020	20		6	8	6	

Evolving Exam Horizons

Science

2020
- From this year, 15-30% of exam questions offer internal choices.
- MCQs and Assertion/ Reason questions are introduced from this year onwards.
- More competency-based questions added compared to last year.
- Word limits for answers established from this year onwards.

2021
- Exam Not Conducted

2022
Term I
- Rationalized syllabus adopted from this year onwards.
- 50/60 questions were needed to attempt.
- All sections were featured solely in objective format.
- Introduction of a dedicated section for 4-mark Case-based questions.

Term II
- Total number of questions reduced.
- All sections were featured solely in subjective format.
- The number of questions in subpart format increased from this year onwards.

2023
- The number of sections in the paper increased to 5 sections (A, B, C and D).
- The total number of questions has increased.
- Since 2020 objective questions have increased by 60%.
- Since 2020 Assertion/Reason questions have increased by 50%.
- Competancy based questions increased in number.
- Activity based questions were introduced.

2024
- No changes in exam pattern

Mathematics

2020
- No overall choice in the question paper. However, an internal choice has been provided in Section A,B,C and D.
- More competency-based questions were added compared to 2019.
- VSA (1 Mark), SA-I (2 Marks), SA-II (3 Marks), LA (4 Marks) 2020 onwards,

2021
- Exam Not Conducted

2022
Term I
- Rationalized Syllabus Onwards.
- Term I is totally MCQ based without negative marking
- Choice among the 10 questions was given only this year.

Term II
- Question paper contains 14 questions
- Term II is descriptive paper which contains very short question (2 marks), short questions (3 marks), long questions (4 marks), and two case studies with 10 MCQ
- Internal choice has given in section A.B and C.

2023
- Rationalised Content Onwards
- Assertion/Reason questions are introduced from this year onwards.
- 3 case based questions with internal choices are added.
- The number of sections in the paper increased to 5 sections (A, B, C, D and E) compared to 2022
- Competancy based questions are increased in number.
- Internal choice has given in section B,C,D and E
- MCQ (1 Mark), VSA (2 Marks), SA (3 Marks), LA (5 Marks), Case-Based (4 Marks) 2023 onwards,

2024
- No changes in exam pattern

CONTENTS

2024

DELHI
CBSE Solved Paper

Time allowed : 3 hours **Maximum Marks : 80**

GENERAL INSTRUCTIONS:

Read the following instructions very carefully and strictly follow them:

(*i*) This question paper comprises **39** questions. **All** questions are compulsory.

(*ii*) This question paper is divided into **five** sections – **A**, **B**, **C**, **D** and **E**.

(*iii*) **Section A** – Question Nos. **1** to **20** are multiple choice questions. Each question carries **1** mark.

(*iv*) **Section B** – Question Nos. **21** to **26** are very short answer type questions. Each question carries **2** marks. Answer to these questions should be in the range of 30 to 50 words.

(*v*) **Section C** – Question Nos. **27** to **33** are short answer type questions. Each question carries **3** marks. Answer to these questions should in the range of 50 to 80 words.

(*vi*) **Section D** – Question Nos. **34** to **36** are long answer type questions. Each question carries **5** marks. Answer to these questions should be in the range of 80 to 120 words.

(*vii*) **Section E** – Question Nos. **37** to **39** are of 3 source-based/case-based units of assessment carrying **4** marks each with sub-parts.

(*viii*) There is no overall choice. However, an internal choice has been provided in some sections. Only one of the alternatives has to be attempted in such questions.

SECTION-A

Select and write the most appropriate option out of the four options given for each of the questions 1-20. There is no negative mark for the incorrect response.

1. When 2 mL of sodium hydroxide solution is added to few pieces of granulated zinc in a test tube and then warmed, the reaction that occurs can be written in the form of a balanced chemical equation as: **(*1 Mark*)**

(*a*) $NaOH + Zn \rightarrow NaZnO_2 + H_2O$

(*b*) $2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2$

(*c*) $2NaOH + Zn \rightarrow NaZnO_2 + H_2$

(*d*) $2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2O$

2. Select from the following a decomposition reaction in which source of energy for decomposition is light: **(*1 Mark*)**

(*a*) $2FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$

(*b*) $2H_2O \rightarrow 2H_2 + O_2$

(*c*) $2AgBr \rightarrow 2Ag + Br_2$

(*d*) $CaCO_3 \rightarrow CaO + CO_2$

3. A metal and a non-metal that exists in liquid state at the room temperature are respectively: **(*1 Mark*)**

(*a*) Bromine and Mercury (*b*) Mercury and Iodine

(*c*) Mercury and Bromine (*d*) Iodine and Mercury

4. 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 Mark*)**

(*a*) (*i*) and (*ii*) (*b*) (*ii*) and (*iii*)

(*c*) (*ii*) and (*iv*) (*d*) (*i*) and (*iii*)

5. Consider the following compounds:

$FeSO_4$; $CuSO_4$; $CaSO_4$; Na_2CO_3

The compound having maximum number of water of crystallisation in its crystalline form in one molecule is: **(*1 Mark*)**

(*a*) $FeSO_4$ (*b*) $CuSO_4$ (*c*) $CaSO_4$ (*d*) Na_2CO_3

6. Oxides of aluminum and zinc are: **(*1 Mark*)**

(*a*) acidic (*b*) basic

(*c*) amphoteric (*d*) neutral

2024

Outside DELHI

CBSE Solved Paper

Time allowed : 3 hours **Maximum Marks : 80**

GENERAL INSTRUCTIONS:

Read the following instructions very carefully and strictly follow them:

(*i*) This question paper comprises **39** questions. **All** questions are compulsory.

(*ii*) This question paper is divided into **FIVE** sections viz. Section **A**, **B**, **C**, **D** and **E**.

(*iii*) In Section **A** - question number **1** to **20** are Multiple Choice Questions (MCQs) carrying **1** mark each.

(*iv*) In Section **B** - question number **21** to **26** are Very Short Answer (VSA) type questions carrying **2** marks each. Answer to these questions should be in the range of **30** to **50** words.

(*v*) In Section **C** - question number **27** to **33** are Short Answer (SA) type questions carrying **3** marks each. Answer to these questions should be in the range of **50** to **80** words.

(*vi*) In Section **D** - question number **34** to **36** are Long Answer (LA) type questions carrying **5** marks each. Answer to these questions should be in the range of **80** to **120** words.

(*vii*) In Section **E** - question number **37** to **39** are of 3 source-based/case-based units of assessment carrying **4** marks each with sub-parts.

(*viii*) There is no overall choice. However, an internal choice has been provided in some Sections. Only one of the alternatives has to be attempted in such questions.

SECTION-A

Select and write one most appropriate option out of the four options given for each of the questions 1 to 20:

1. Consider the following statements about homologous series of carbon compounds: ***(1 Mark)***

A. All succeeding members differ by $-CH_2$ unit.

B. Melting point and boiling point increases with increasing molecular mass.

C. The difference in molecular masses between two successive members is 16 u.

D. C_2H_2 and C_3H_4 are NOT the successive members of alkyne series.

The correct statements are-

(*a*) (A) and (B) (*b*) (B) and (C)

(*c*) (A) and (C) (*d*) (C) and (D)

2. The number of shells required to write the electronic configuration of Potassium (At. No. 19) ***(1 Mark)***

(*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4

3. Select from the following a process in which a combination reaction is involved: ***(1 Mark)***

(*a*) Black and White photography

(*b*) Burning of coal

(*c*) Burning of methane

(*d*) Digestion of food

4. The oxide which can react with HCl as well as KOH to give corresponding salt and water is ***(1 Mark)***

(*a*) CuO (*b*) Al_2O_3 (*c*) Na_2O (*d*) K_2O

5. Which of the following is an alloy of copper and tin? ***(1 Mark)***

(*a*) Nichrome (*b*) Brass

(*c*) Constantan (*d*) Bronze

6. Tooth decay begins at the pH of: ***(1 Mark)***

(*a*) 5.1 (*b*) 5.8 (*c*) 6.5 (*d*) 8.0

7. Solid Calcium oxide reacts vigorously with water to form Calcium hydroxide accompanied by the liberation of heat. From the information given above it may be concluded that this reaction ***(1 Mark)***

(*a*) is endothermic and pH of the solution formed is more than 7.

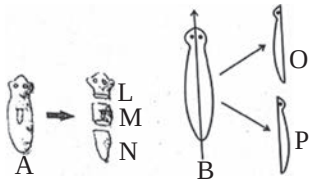
(*b*) is exothermic and pH of the solution formed is 7.

(*c*) is endothermic and pH of the solution formed is 7.

(*d*) is exothermic and pH of the solution formed is more than 7.

39. Asexual reproduction involves a single parent to produce offsprings without the formation of gametes. It occurs by the following ways:

Fission, Buddling, Fragmentation, Spore formation and Regeneration. In one of the methods like regeneration, *Planaria* A is cut horizontally into three pieces- L, M and N and *Planaria* B is cut vertically into two equal halves –O and P. **(*4 Marks*)**



(*a*) Which of the cut pieces of the two *Planaria* could regenerate to form a complete organism? **(*1 Mark*)**

(*b*) Give an example of another organism which follows the same mode of reproduction as *Planaria*. **(*1 Mark*)**

(*c*) What is the meaning of 'development' in regeneration? **(*2 Marks*)**

OR

(*c*) Differentiate between regeneration and fragmentation. **(*2 Marks*)**

EXPLANATIONS

1. (*a*) In a homologous series, the difference in molecular masses between two successive members is 14u (not 16u). C_2H_2 and C_3H_4 are the successive members of the alkyne series as they differ by the $–CH_2$ unit and corresponds to the same general formula of alkynes series. **(*1 Mark*)**

2. (*d*) The electronic configuration of potassium (K) is

	K	L	M	N (shells)
K :	2	8	8	1

Hence, four shells are required. **(*1 Mark*)**

3. (*b*) The chemical reaction involved in the burning of coal is $C(s) + O_2(g) \rightarrow CO_2(g)$

Since, in the above reaction, C combines with O_2 to give single product CO_2, therefore, it is a combination reaction. **(*1 Mark*)**

4. (*b*) Al_2O_3 is an amphoteric oxide which can react with HCl (an acid) as well as KOH (a base) to give corresponding salt and water. **(*1 Mark*)**

5. (*d*) Bronze is an alloy of copper(Cu) and tin(Sn). **(*1 Mark*)**

6. (*a*) Tooth decay starts when the pH of the mouth is lower than 5.5. Hence, among all the given pH values, at pH 5.1, tooth decay starts. **(*1 Mark*)**

7. (*d*) Since, the product formed in the given reaction is calcium hydroxide, $Ca(OH)_2$, which is the base and the reaction is accompanied by the liberation of heat, therefore, the reaction is exothermic and the pH of the solution formed is more than 7. **(*1 Mark*)**

8. (*b*) When a person inhales, the diaphragm contracts and flattens, and the ribs are lifted, increasing the chest cavity volume and decreasing the pressure inside, which draws air into the lungs. **(*1 Mark*)**

9. (*a*) The pituitary gland is a single, pea-sized gland situated at the base of the brain. Ovaries, testes, and adrenal glands all occur as pairs in the human body. **(*1 Mark*)**

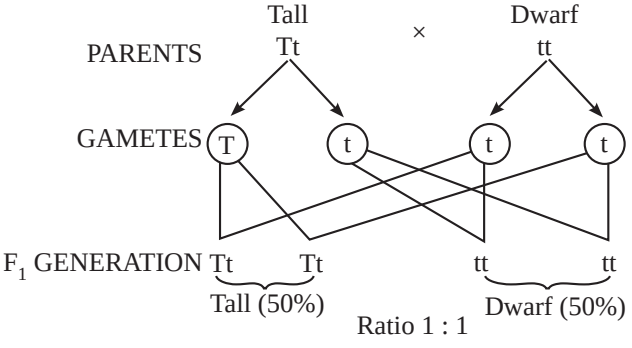
10. (*c*) The incorrect statements are:

(*a*) The right atrium receives deoxygenated blood through the vena cava, not oxygenated blood from the pulmonary artery. **(*½ Mark*)**

(*d*) The left atrium transfers oxygenated blood to the left ventricle, which then sends it to the aorta, not directly from the left atrium to the aorta. **(*½ Mark*)**

11. (*d*) The diagram shows a sporangium with spores, characteristic of *Rhizopus*, a type of fungus, commonly known as bread mold. **(*1 Mark*)**

12. (*c*) A heterozygous tall (Tt) plant crossed with a homozygous recessive (tt) dwarf plant will yield 50% tall (Tt) and 50% dwarf (tt) offspring.



(*1 Mark*)

CBSE SAMPLE QUESTION PAPER

(Issued by CBSE on 31st March, 2023)

Class-X Session: 2023-24

SCIENCE (086)

Time allowed : 3 hours | Maximum Marks : 80

GENERAL INSTRUCTIONS:

*(i) This question paper consists of **39** questions in **5** sections.*

(ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

*(iii) Section **A** consists of **20** objective type questions carrying **1** mark each.*

*(iv) Section **B** consists of **6** Very Short questions carrying **02** marks each. Answers to these questions should be in the range of **30** to **50** words.*

*(v) Section **C** consists of 7 Short Answer type questions carrying **03** marks each. Answers to these questions should be in the range of **50** to **80** words.*

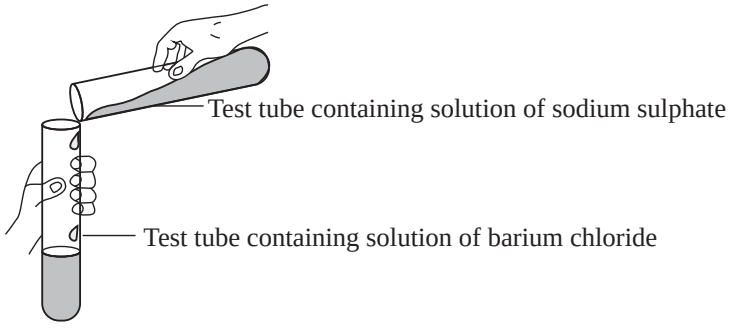
*(vi) Section **D** consists of 3 Long Answer type questions carrying **05** marks each. Answer to these questions should be in the range of **80** to **120** words.*

*(vii) Section **E** consists of 3 source-based/case-based units of assessment of **04** marks each with sub-parts.*

SECTION - A

Select and write the most appropriate option out of the four options given for each of the question 1 – 20. There is no negative mark for incorrect response.

1.



Identify the product which represents the solid state in the above reaction.

(*a*) Barium chloride (*b*) Barium sulphate (*c*) Sodium chloride (*d*) Sodium sulphate

Sol. (*b*) Barium sulphate **(*1 M*)**

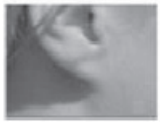
2. The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is

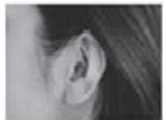
(*a*) Blue (*b*) Colourless (*c*) Dirty green (*d*) Reddish Brown

Sol. (*b*) Colourless **(*1 M*)**

38. Figures (*a*) to (*d*) given below represent the type of ear lobes present in a family consisting of 2 children – Rahul, Nisha and their parents.


(*a*) Rahul's Father


(*b*) Rahul


(*c*) Rahul's Mother


(*d*) Rahul's sister Nisha


(*e*) (*f*) Type of ear lobes

Excited by his observation of different types of ear lobes present in his family, Rahul conducted a survey of the type of ear lobes found {Figure (*e*) and (*f*)} in his classmates. He found two types of ear lobes in his classmates as per the frequency given below:

Sex	Free	Attached
Male	36	14
Female	31	19

On the basis of above data answer the following questions.

(*a*) Which of the two characteristics - 'free ear lobe' or 'attached ear lobe' appears to be dominant in this case? Why?

(*b*) Is the inheritance of the free ear lobe linked with sex of the individual? Give reason for your answer.

(*c*) What type of ear lobe is present in father, mother, Rahul and his sister Nisha? Write the genetic constitution of each of these family members which explains the inheritance of this character in this family?

(Gene for Free ear lobe is represented by F and gene for attached ear lobe is represented by f for writing the genetic constitution).

OR

Suresh's parents have attached ear lobes. What type of ear lobe can be seen in Suresh and his sister Siya? Explain by giving the genetic composition of all.

Sol. (*a*) Free ear lobe is dominant because it is found in a large majority of the population. ***(1 M)***

(*b*) No. It is not sex linked. As per the data of the family as well as the class, it is indicated that free ear lobe is present in males as well as in females. ***(1 M)***

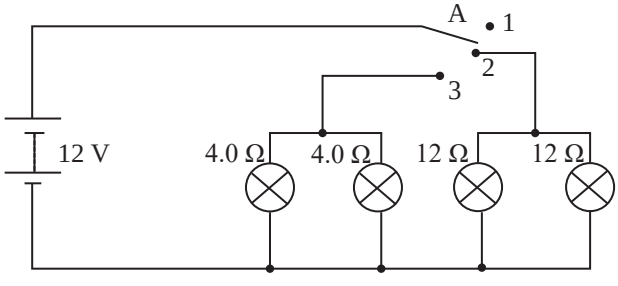
(*c*) Father – Ff (free ear lobe), Mother – Ff (free ear lobe), Rahul – ff (attached ear lobe) and Nisha – Ff (free ear lobe)

(½ × 4 = 2 M)

OR

Suresh's father – ff (attached ear lobe), mother – ff (attached ear lobe), Suresh - ff (attached ear lobe), Siya – ff (attached ear lobe). If both parents have recessive character, then all the children can have recessive character only.

39.



Vinita and Ahmed demonstrated a circuit that operates the two headlights and the two sidelights of a car, in their school exhibition. Based on their demonstrated circuit, answer the following questions.

(*i*) State what happens when switch A is connected to

(*a*) Position 2

(*b*) Position 3

(*ii*) Find the potential difference across each lamp when lit.

CBSE SAMPLE QUESTION PAPER
(Issued by CBSE on 08th September, 2023)

(ADDITIONAL PRACTICE QUESTIONS)

Class-X Session: 2023-24
SCIENCE (086)

Time Allowed : 3 hours | Maximum Marks : 80

GENERAL INSTRUCTIONS:

*(i) This question paper consists of **39** questions in **5** sections.*

(ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

*(iii) Section **A** consists of **20** objective type questions carrying **1** mark each.*

*(iv) Section **B** consists of **6** Very Short questions carrying **02** marks each. Answers to these questions should be in the range of **30** to **50** words.*

*(v) Section **C** consists of **7** Short Answer type questions carrying **03** marks each. Answers to these questions should be in the range of **50** to **80** words.*

*(vi) Section **D** consists of **3** Long Answer type questions carrying **05** marks each. Answer to these questions should be in the range of **80** to **120** words.*

*(vii) Section **E** consists of **3** source-based/case-based units of assessment of **04** marks each with sub-parts.*

SECTION - A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. A single displacement reaction is represented below. $PQ + R \rightarrow PR + Q$
Which of the following is true about the reactants and products?

Option	Type of ion of R in product	Stability of PR as compared to *PQ*
A	cation	more stable
B	cation	less stable
C	anion	more stable
D	anion	less stable

(*a*) *A* (*b*) *B* (*c*) *C* (*d*) *D*

Sol. (*c*) C **(*1 M*)**

2. Some types of chemical reactions are listed below.
- decomposition - combination - displacement - double displacement

Which two of the following chemical reactions are of the SAME type?

(*P*) $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ (*Q*) $Mg + 2HCl \rightarrow MgCl_2 + H_2$

(*R*) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ (*S*) $2KOH + H_2SO_4 \rightarrow K_2SO_4 + H_2O$

(*a*) *P* and *Q* (*b*) *Q* and *R* (*c*) *R* and *S* (*d*) *P* and *S*

Sol. (*d*) *P* and *S* **(*1 M*)**

2022

Outside DELHI Term-II

CBSE Solved Paper

Time allowed : 2 hours **Maximum Marks : 40**

GENERAL INSTRUCTIONS:

Read the following instructions carefully and strictly follow them:

(*i*) This question paper contains **15** questions. **All** questions are compulsory.

(*ii*) This question paper is divided into **three** Sections viz. Section **A**, **B** and **C**.

(*iii*) Section **A** - Question numbers **1** to **7** are short answer type questions. Each question carries **two** marks.

(*iv*) Section **B** - Question numbers **8** to **13** are also short answer type questions. Each question carries **three** marks.

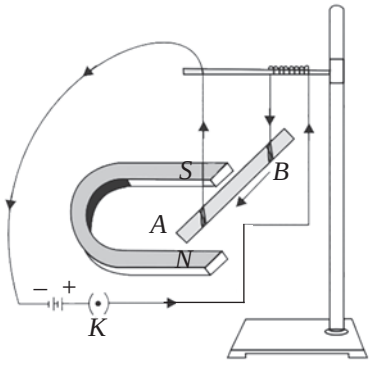
(*v*) Section **C** - Question No. **14** and **15** are case based questions. Each question carries **four** marks.

(*vi*) Internal choices have been provided in some questions. Only one of the alternatives has to be attempted.

SECTION-A

1. Explain giving reason why although the nuclear charge in atoms increases in moving from left to right in a period as well as in moving from top to bottom in a group in the Modern periodic table, but the size of the atoms does not vary similarly in both situations. **[OS]* (*2 Marks*)**

2. As shown in the diagram an aluminum rod '*AB*' is suspended horizontally between the two poles of a strong horse shoe magnet in such a way that the axis of rod is horizontal and the direction of the magnetic field is vertically upward. The rod is connected in series with a battery and a key. **(*2 Marks*)**



State giving reason:

(*a*) What is observed when a current is passed through the aluminum rod from end *B* to end *A*?

(*b*) What change is observed in a situation in which the axis of the rod '*AB*' is moved and aligned parallel to the magnetic field and current is passed in the rod in the same direction?

OR

"Magnetic field is a physical quantity that has both direction and magnitude." How can this statement be proved with the help of magnetic field lines of a bar magnet?

3. Using height (tallness/dwarfness) of a plant as an example, show that genes control the characteristics or traits in an organism. **(*2 Marks*)**

OR

In a cross between red coloured and white coloured flowers, when plants with red coloured flowers of F_1 generation were self pollinated, plants of F_2 generation were obtained in which 75% of plants were with red flowers and 25% plants were with white flowers.

Explain the inheritance of traits in the above cross with the help of a flow chart only along with the ratio of plants obtained.

4. Mention the functions of (*a*) Placenta (*b*) Fallopian tubes (*c*) Uterus and (*d*) Ovary in the human female reproductive system. **(*2 Marks*)**

**[OS] denotes Out of the Syllabus questions.*

5. "The improvement in our lifestyle has led to the generation of large amount of waste material." List two reasons to justify this statement. **(*2 Marks*)**

OR

"The change in packaging has resulted in waste becoming non-biodegradable."

Giving two examples from daily life, justify this statement.

6. (*a*) Differentiate between binary fission in *Amoeba* and binary fission in *Leishmania*. **(*2 Marks*)**

(*b*) How does reproduction take place in malarial parasite?

7. Consider the carbon compounds having following molecular formula: **(*2 Marks*)**

(*i*) C_3H_6 (*ii*) C_3H_8

(*iii*) C_4H_6 (*iv*) C_6H_6

(*v*) C_6H_{12}

(*a*) State the number of double covalent bonds present in C_3H_6.

(*b*) Write the formula of first member of the homologous series to which the carbon compound C_4H_6 belongs.

(*c*) Which one of the above compounds forms ring structure of carbon atoms?

(*d*) Identify, which of the above compounds, is a member of alkane series.

SECTION-B

8. Name the elements whose compounds formed the basis of classification in Mendeleev's periodic table. Why did Mendeleev choose these elements?

How the formula of these compounds had helped Mendeleev in deciding the position of an element in his periodic table? **[OS]* (*3 Marks*)**

9. What are trophic levels? Why are autotrophs considered to be at the first trophic level of all food chains? State the reason for limited number of trophic levels in nature.

(*3 Marks*)

10. In flowering plants, the pollen grains are transferred to stigma by pollination but the female germ cells are present in the ovary. Explain with the help of a labeled diagram (only concerned parts), how the male germ cell reaches the ovary. **(*3 Marks*)**

11. "Two different forms of carbon — diamond and graphite have different structures and very different physical properties even though their chemical properties are same." Explain why? **(*3 Marks*)**

OR

State the reasons, why carbon cannot

(*i*) Lose four electrons to form C^{4+} cation, and

(*ii*) Gain four electrons to form C^{4-} anion.

How does carbon overcome this problem to form compounds?

12. (*a*) A student wants to use an electric heater, an electric bulb and an electric fan simultaneously.

How should these gadgets be connected with the mains? Justify your answer giving three reasons.

(*b*) What is an electric fuse? How is it connected in a circuit? **(*3 Marks*)**

13. An electric motor rated 1100 W is connected to 220 V mains. Find: **(*3 Marks*)**

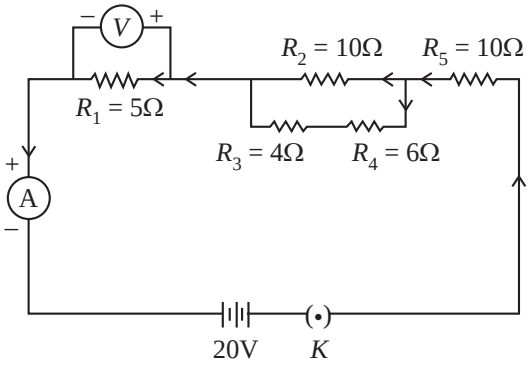
(*i*) The current drawn from the mains,

(*ii*) Electric energy consumed if the motor is used for 5 hours daily for 6 days.

(*iii*) Total cost of energy consumed if the rate of one unit is ₹5?

OR

Study the following circuit and find:



(*i*) Effective resistance of the circuit

(*ii*) Current drawn from the battery

(*iii*) Potential difference across the 5Ω resistor

SECTION-C

This section has 02 case based questions (14 and 15).

Each case is followed by 03 sub-questions (*a*, *b* and *c*). Part (*a*) and (*b*) are compulsory. However an internal choice has been provided in Part (*c*).

14. *AB* is a coil of copper wire having a large number of turns. The ends of the coil are connected with a galvanometer as shown. When the north pole of a strong bar magnet is moved towards the end *B* of the coil, a deflection is observed in the galvanometer. **[OS]* (*4 Marks*)**

**[OS] denotes Out of the Syllabus questions.*

2022

Term-I

CBSE Solved Paper

Time allowed : 90 minutes **Maximum Marks : 40**

GENERAL INSTRUCTIONS:

Read the following instructions carefully and strictly follow them:

(*i*) This question paper contains **60** questions out of which **50** questions are to be attempted. All questions carry equal marks.

(*ii*) The question paper consists of three Sections - Section **A**, **B** and **C**.

(*iii*) Section-**A** consists of **24** questions. Attempt any **20** questions from Q. No. **1** to **24**.

(*iv*) Section-**B** also consists of **24** questions. Attempt any **20** questions from Q. No. **25** to **48**.

(*v*) Section-**C** consists of three Case Studies containing **12** questions and **4** questions in each case. Attempt any **10** from Q. No. **49** to **60**.

(*vi*) There is only one correct option for every Multiple Choice Question (MCQ). Marks will not be awarded for answering more than one option.

(*vii*) There is no negative marking

Section-A

Section-**A** consists of **24** question (Q. No. **1** to **24**). Attempt any **20** questions from this section. The first attempted 20 questions would be evaluated.

1. A student took Sodium Sulphate solution in a test tube and added Barium Chloride solution to it. He observed that an insoluble substance has formed. The colour and molecular formula of the insoluble substance is:

(*a*) Grey, Ba_2SO_4 (*b*) Yellow, $Ba(SO_4)_2$

(*c*) White, $BaSO_4$ (*d*) Pink, $BaSO_4$

2. Which of the following oxide(s) is/are soluble in water to form alkalies?

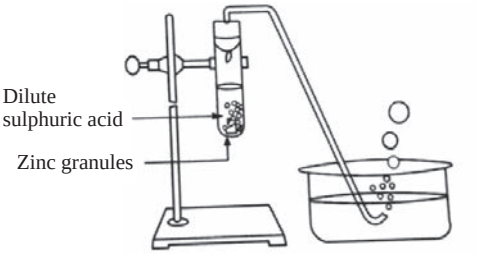
(*i*) Na_2O (*ii*) SO_2

(*iii*) K_2O (*iv*) NO_2

(*a*) (*i*) and (*iii*) (*b*) (*i*) only

(*c*) (*ii*) and (*iv*) (*d*) (*iii*) only

3. Study the diagram given below and identify the gas formed in the reaction.



(*a*) Carbon dioxide which extinguishes the burning candle.

(*b*) Oxygen due to which the candle burns more brightly.

(*c*) Sulphur dioxide which produces a suffocating smell.

(*d*) Hydrogen which while burning produces a popping sound.

4. Sodium reacts with water to form sodium hydroxide and hydrogen gas.

The balanced equation which represents the above reaction is:

(*a*) $Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + 2H_2(g)$

(*b*) $2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$

(*c*) $2Na(s) + 2H_2O(l) \rightarrow NaOH(aq) + 2H_2(g)$

(*d*) $2Na(s) + H_2O(l) \rightarrow 2NaOH(aq) + 2H_2(g)$

5. Which of the options in the given table are correct?

	Natural Source	Acid Present
(*i*)	Orange	Oxalic acid
(*ii*)	Sour milk	Lactic acid
(*iii*)	Ant sting	Methanoic acid
(*iv*)	Tamarind	Acetic acid

(*a*) (*i*) and (*ii*) (*b*) (*i*) and (*iv*)

(*c*) (*ii*) and (*iii*) (*d*) (*iii*) and (*iv*)

6. $C_6H_{12}O_6(aq) + 6O_2(aq) \rightarrow 6CO_2(aq) + 6H_2O(l)$

The above reaction is a/an

(*a*) displacement reaction (*b*) endothermic reaction

(*c*) exothermic reaction (*d*) neutralisation reaction

7. Which of the following statements about the reaction given below are correct?

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

(*i*) HCl is oxidized to Cl_2

(*ii*) MnO_2 is reduced to $MnCl_2$

(*iii*) $MnCl_2$, acts as an oxidizing agent

(*iv*) HCl acts as an oxidizing agent

(*a*) (*ii*), (*iii*) and (*iv*) (*b*) (*i*), (*ii*) and (*iii*)

(*c*) (*i*) and (*ii*) only (*d*) (*iii*) and (*iv*) only

8. Select from the following the statement which is true for bases.

(*a*) Bases are bitter and turn blue litmus red.

(*b*) Bases have a pH less than 7.

(*c*) Bases are sour and change red litmus to blue.

(*d*) Bases turn pink when a drop of phenolphthalein is added to them.

9. Study the following table and choose the correct option:

	Salt	Parent Acid	Parent Base	Nature of Salt
(*a*)	Sodium Chloride	HCl	NaOH	Basic
(*b*)	Sodium Carbonate	H_2CO_3	NaOH	Neutral
(*c*)	Sodium Sulphate	H_2SO_3	NaOH	Acidic
(*d*)	Sodium Acetate	CH_3COOH	NaOH	Basic

10. It is important to balance the chemical equations to satisfy the law of conservation of mass. Which of the following statements of the law is incorrect?

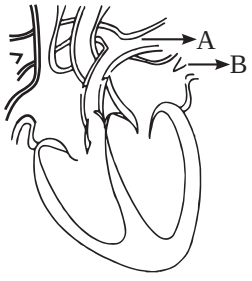
(*a*) The total mass of the elements present in the reactants is equal to the total mass of the elements present in the products.

(*b*) The number of atoms of each element remains the same, before and after a chemical reaction.

(*c*) The chemical composition of the reactants is the same before and after the reaction.

(*d*) Mass can neither be created nor can it be destroyed in a chemical reaction.

11. Consider the following statements in connection with the functions of the blood vessels marked A and B in the diagram of a human heart as shown.



(*i*) Blood vessel A - It carries carbon dioxide rich blood to the lungs.

(*ii*) Blood vessel B - It carries oxygen rich blood from the lungs.

(*iii*) Blood vessel B - Left atrium relaxes as it receives blood from this blood vessel.

(*iv*) Blood vessel A - Right atrium has thick muscular wall as it has to pump blood to this vessel.

The correct statements are

(*a*) (*i*) and (*ii*) only (*b*) (*ii*) and (*iii*) only

(*c*) (*ii*), (*iii*) and (*iv*) (*d*) (*i*), (*ii*) and (*iii*)

12. In living organisms during respiration which of the following products are not formed if oxygen is not available?

(*a*) Carbon dioxide + Water

(*b*) Carbon dioxide + Alcohol

(*c*) Lactic acid + Alcohol

(*d*) Carbon dioxide + Lactic Acid

13. The correct statements with reference to single celled organisms are

(*i*) Complex substances are not broken down into simple substances.

(*ii*) Simple diffusion is sufficient to meet the requirement of exchange of gases.

(*iii*) Specialised tissues perform different functions in the organism.

(*iv*) Entire surface of the organism is in contact with environment for taking in food.

(*a*) (*i*) and (*iii*) (*b*) (*ii*) and (*iii*)

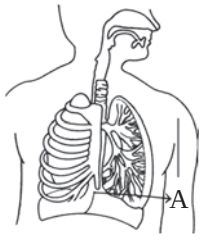
(*c*) (*ii*) and (*iv*) (*d*) (*i*) and (*iv*)

14. Which one among the following is not removed as a waste product from the body of a plant?

(*a*) Resin and Gums (*b*) Urea

(*c*) Dry Leaves (*d*) Excess Water

15. Which of the following statements are correct in reference to the role of A (shown in the given diagram) during a breathing cycle in human beings?



1. (*c*) $\underset{\text{(Barium chloride)}}{BaCl_2} + \underset{\text{(Sodium sulphate)}}{Na_2SO_4} \rightarrow \underset{\text{(Sodium chloride)}}{2NaCl} + \underset{\text{(Barium sulphate) (white)}}{BaSO_4}\downarrow$

2. (*a*) Generally, metal oxides are basic in nature and non-metallic oxides are acidic in nature. Some of the metal oxides form alkali when dissolved in water. In the given oxides, sodium and potassium oxides are metallic in nature and they form sodium and potassium hydroxides respectively.

$Na_2O(s) + H_2O(l) \rightarrow 2NaOH(aq)$

$K_2O(s) + H_2O(l) \rightarrow 2KOH(aq)$

Here, SO_2 and NO_2 due to acidic in nature will not form alkalies in water.

3. (*d*) According to the given diagram, it is clear that zinc granules are present in a test tube, and dilute H_2SO_4 is poured on it. Zinc, which is more reactive than hydrogen, displaces it and form zinc sulphate. Hydrogen gas is also formed during this. H_2 gas is combustible in nature therefore, it burns with popping sound when a burnt match stick is bought near to this.

Thus, it is clear that the gas formed is hydrogen gas.

4. (*b*) In all the given reactions, the balanced equation is,

$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$

Here, on both the left and right side of arrow, same number of atoms of each element are present.

5. (*c*) In the given table, (*i*) and (*iv*) are not correctly matched as orange contains citric acid and tamarind contains tartaric acid.

6. (*c*) The given reaction is involved in the process of respiration, which gives enormous amount of energy. Such type of reactions in which, large amount of energy is produced along with products are called exothermic reaction.

7. (*c*) In the given reaction, MnO_2 loses oxygen and forms $MnCl_2$. Therefore, it is said that MnO_2 is reduced to $MnCl_2$. Whereas, HCl loses hydrogen and forms Cl_2. Therefore, it is said that HCl is oxidized to Cl_2.

8. (*d*) Bases turn pink when a drop of phenolphthalein is added to them as, phenolphthalein is a weak acid and it gives pink colour when added to base.

9. (*d*) Option (*d*) is correct because sodium acetate is formed when acetic acid (weak acid) and sodium hydroxide (strong base) is reacted with each other. Since, sodium hydroxide is a strong base and acetic acid is a weak acid, therefore, the overall salt solution will be basic.

10. (*c*) Statement (*c*) is incorrect because chemical composition of the reactants and products is not same before and after a chemical reaction. This is because new compounds are formed as products.

11. (*d*) The diagram illustrates the pulmonary artery (A) transporting deoxygenated blood from the right ventricle to the lungs and the pulmonary vein (B) conveying oxygenated blood from the lungs to the left atrium, which relaxes. The left ventricle is distinguished by its thick muscular wall, necessary for pumping blood through the aorta to the body, not the right atrium.

12. (*a*) In the absence of oxygen, anaerobic respiration occurs, producing lactic acid and energy (in our muscle cells) and ethanol, carbon dioxide, and energy (in yeast), but not water. Water and carbon dioxide production occurs in aerobic respiration, i.e., in the presence of oxygen.

13. (*c*) In single-celled organisms, digestion occurs inside the food vacuoles, where complex food is broken down into simpler substances. Since the entire surface of a single-celled organism is in direct contact with the environment, they can take in food directly from their surroundings, eliminating the need for specialized tissue for food digestion or other functions.

14. (*b*) Plants excrete various products such as gums, latex, resins etc. Plants get rid of these products through shedding of leaves and falling of fruits. Urea is an excretory product which is generally produced by the breakdown of proteins in humans. This excretory product is not excreted by the plants.

15. (*d*) A in the figure represents diaphragm. During expiration, the diaphragm and intercostal muscles relax, causing the lungs and thoracic tissues to recoil, which decreases the volume of the lungs and expels the residual gas remaining in them. The diaphragm flattens and move down towards the abdomen as we inhale and becomes dome-shaped and raised upward when we exhale.

16. (*c*) The diagram illustrates the closure of stomatal pores. They open and close via specialized cells called guard cells. When these cells lose water, they shrink, causing the pores to close. Similarly the guard cells swell when water flow into them, causing the pore to open. The pores close when the plant doesn't need carbon dioxide for photosynthesis to prevent excessive water loss.

COMPLETE YOUR BOARD PREPARATION

QUESTION & CONCEPT BANK

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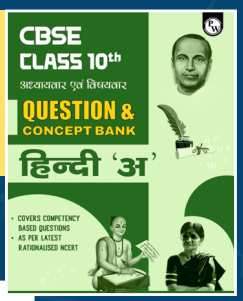
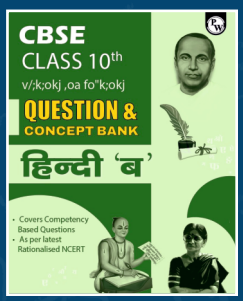
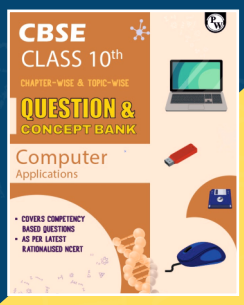
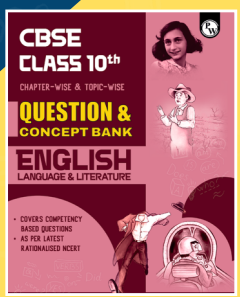
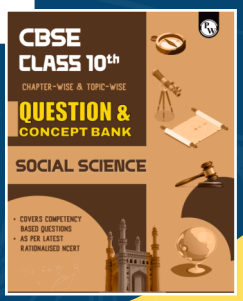
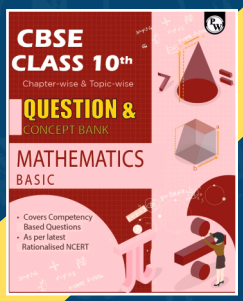


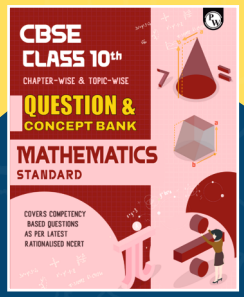


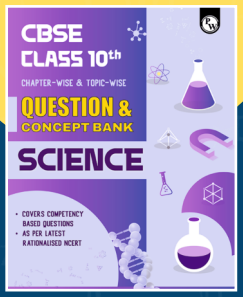




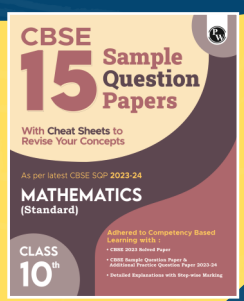


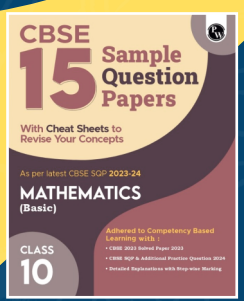


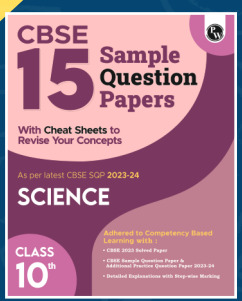


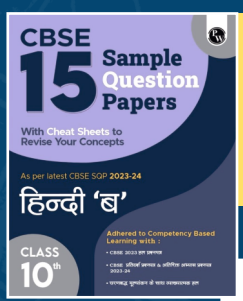


SAMPLE PAPERS









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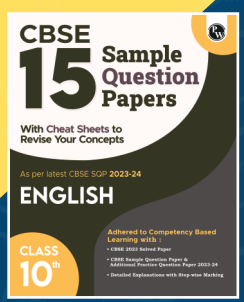

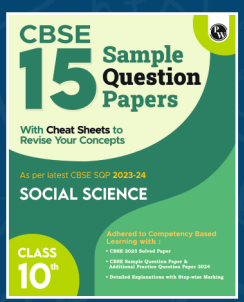

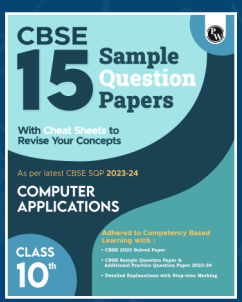

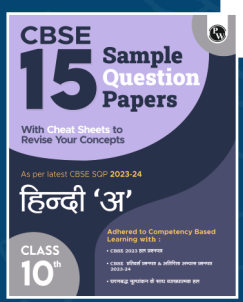

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