



Est'd. 1961

BOYS' HIGH SCHOOL AND COLLEGE

FIRST TERM EXAMINATION (2023-24)

CLASS IX

CHEMISTRY (SCIENCE PAPER – 2)

TIME- 2 HOURS

MM- 80

Attempt *all* questions from *Section A* and any *four* questions from *Section B*.
The intended marks for questions or part of questions are given in brackets [].

Section A (40 marks)

Attempt all questions from this section.

Question 1. Choose the correct answer from the given alternatives-

[15]

- i. Which of the following element forms a triatomic molecule?
 - a. O
 - b. Cl
 - c. N
 - d. Na
- ii. Which of the following is the symbol for Ferric ion?
 - a. Fe^{2+}
 - b. Fe^{2-}
 - c. Fe^{3+}
 - d. Fe^{3-}
- iii. Which of the following will be the formula of Sodium perchlorate?
 - a. $NaClO_4$
 - b. $NaClO_2$
 - c. $NaClO_3$
 - d. $NaClO$
- iv. The symbol for Phosphate radical is _____.
 - a. PO_4^{3-}
 - b. PO_3^{3-}
 - c. P^{3-}
 - d. PO_3^{2-}
- v. Which of the following does not show variable valency?
 - a. Silver
 - b. Gold
 - c. Copper
 - d. Zinc
- vi. The valency of P in P_2O_3 will be _____.
 - a. 1
 - b. 2
 - c. 3
 - d. 4
- vii. The formula of caustic potash is _____.
 - a. NaOH
 - b. $Ca(OH)_2$
 - c. KOH
 - d. $Mg(OH)_2$
- viii. Lime water turning milky is a standard indication for the presence of _____.
 - a. Nitrogen
 - b. Oxygen
 - c. Carbon dioxide
 - d. Hydrogen
- ix. When H_2S gas is passed through $CuSO_4$, black precipitate of CuS is formed and H_2SO_4 so formed remains in the solution. The reaction is an example of _____.
 - a. Combination reactions
 - b. Displacement reactions
 - c. Double displacement reactions
 - d. Decomposition reactions
- x. $NaOH + HCl \rightarrow NaCl + H_2O$ reaction is an example of _____.
 - a. Decomposition reactions
 - b. Displacement reactions
 - c. Neutralisation reactions
 - d. Combination reactions
- xi. The component of a solution which is present in large amount is referred to as _____.
 - a. Solution
 - b. Solvent
 - c. Solute
 - d. None of the above.
- xii. Which of the following is NOT an example of hygroscopic substances?
 - a. Quick lime
 - b. Silica gel
 - c. Concentrated H_2SO_4
 - d. $ZnCl_2$
- xiii. Which of the following is the formula for blue vitriol?
 - a. $MgSO_4 \cdot 7H_2O$
 - b. $Na_2SO_4 \cdot 10H_2O$
 - c. $ZnSO_4 \cdot 7H_2O$
 - d. $CuSO_4 \cdot 5H_2O$
- xiv. Which of the following is an example of deliquescent substance?
 - a. $MgCl_2$
 - b. Na_2SO_4
 - c. CaO
 - d. $CuSO_4$
- xv. Hardness in water is due to the presence of _____.
 - a. Bicarbonates of Ca and Mg.
 - b. Chlorides and sulphates of Ca and Mg
 - c. Bicarbonates and carbonates of Ca and Mg
 - d. Bicarbonates, chlorides and sulphates of Ca and Mg.

Question 2.

- i. Balance the following chemical equations- [5]
 - a. $Zn + HNO_3 \rightarrow Zn(NO_3)_2 + H_2O + NO_2$
 - b. $Fe + H_2O \rightleftharpoons Fe_3O_4 + H_2$
 - c. $KMnO_4 + HCl \rightarrow KCl + MnCl_2 + H_2O + Cl_2$
 - d. $KClO_3 \rightarrow KCl + O_2$
 - e. $AgNO_3 + NaCl \rightarrow NaNO_3 + AgCl \downarrow$
- ii. Define the following- [5]
 - a. Efflorescence
 - b. Deliquescence
 - c. Hygroscopic substances
 - d. Hydrated substances
 - e. Water of hydration
- iii. Write the formula of the following compounds- [5]
 - a. Sodium carbonate
 - b. Ferric chloride
 - c. Cupric oxide
 - d. Lead nitrate
 - e. Magnesium sulphate

Python
Robotics & AI



JAVA
Comp. Applications



Experts' Institute
8-D, Kutchery Road, Ph:9415368884

EXPERTS'
INSTITUTE

- iv. What will be the valency of?
 a. Calcium in $\text{Ca}(\text{OH})_2$
 b. Aluminium in $\text{Al}(\text{OH})_3$
 c. Chlorine in NaCl
 d. Phosphorus in PCl_5
 e. Nitrogen in NO_2 [5]
- v. 1. Write the following equations and balance them- [3+2=5]
 a. Acidified water $\xrightarrow{\text{electric current}}$ hydrogen + oxygen.
 b. Nitrogen + hydrogen \rightleftharpoons ammonia
2. Name the following-
 a. A substance whose solubility increases only a little with increase in temperature _____.
 b. Chemical name of green vitriol _____.
 c. A red coloured crystal _____.
 d. An anhydrous crystal _____.

Section B (40 Marks)
 Attempt any four questions from this section.

Question 3.

- i. What is an Endothermic reaction? Give an example. [2]
 ii. What happens when? - (Write chemical equations only). [2]
 a. When few pieces of iron are dropped into a blue coloured copper sulphate solution.
 b. Hydrated copper sulphate crystals are heated in a test tube.
- iii. Identify the 'type' of the following chemical reactions- [3]
 a. $\text{Zn}(\text{OH})_2 \xrightarrow{\Delta} \text{ZnO} + \text{H}_2\text{O}$
 b. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
 c. $\text{AgNO}_3 + \text{HCl} \rightarrow \text{AgCl} \downarrow + \text{HNO}_3$
- iv. Fill in the blanks- [3]
 a. The reaction between an acid and a base that forms salt and water only is known as _____.
 b. _____ accelerates the rate of a reaction.
 c. The formation of gas bubbles in a liquid during a reaction is called _____.

Question 4.

- i. What information do the following symbols in a chemical equation convey? [2]
 a. \downarrow b. Δ c. \uparrow d. \rightleftharpoons
- ii. Differentiate between the following- [2]
 a. Promoter and Catalyst
 b. Thermal decomposition reaction and Thermal dissociation reaction.
- iii. Define the following- [3]
 a. Compound radical b. Chemical reaction c. Valency
- iv. Give reason for the following statements- [3]
 a. Certain metals exhibit variable valency.
 b. A chemical equation should be balanced.
 c. The word or term 'heat' is written on the product side in a chemical equation.

Question 5.

- i. Differentiate between- [2]
 a. Anhydrous and amorphous substances b. Drying and dehydrating agent
- ii. State two ways, by which a saturated solution can be changed to an unsaturated solution. [2]
- iii. Fill in the blanks- [3]
 a. _____ is suitable to dry NH_3 gas.
 b. _____ is used to dry acidic gases like HCl .
 c. A solution produced by dissolving a substance in water is called _____.
- iv. How would you remove the permanent hardness of water? Explain with suitable reactions. [3]

Question 6.

- i. Define the following- [2]
 a. Solubility
 b. Solubility curve
- ii. Calculate the relative molecular mass of $\text{K}_2\text{Cr}_2\text{O}_7$ (Relative atomic masses of $\text{K}=39$, $\text{Cr}=52$ and $\text{O}=16$). [2]
- iii. Find the percentage of water of crystallisation ($5\text{H}_2\text{O}$) in copper sulphate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) (Relative atomic masses of $\text{Cu}=63.5$, $\text{S}=32$, $\text{O}=16$ and $\text{H}=1$). [3]
- iv. Complete and balance the following chemical equations- [3]
 a. $\text{AgCl} \xrightarrow{\text{sunlight}}$ _____ + _____.
 b. $\text{KNO}_3 \xrightarrow{\text{heat}}$ _____ + _____.

Question 7.

- i. Write the difference between saturated solution and unsaturated solution. What is a supersaturated solution? [2]
- ii. Calculate the relative molecular mass of CH_3COOH (acetic acid). (Relative atomic masses of $\text{C}=12$, $\text{H}=1$ and $\text{O}=16$) [2]
- iii. Calculate the percentage composition of various elements in $\text{C}_2\text{H}_5\text{OH}$ (ethyl alcohol). (Relative atomic masses of $\text{C}=12$, $\text{H}=1$ and $\text{O}=16$) [3]
- iv. What are the disadvantages of using hard water? [3]

Question 8.

- i. What are 'Trivial names'? Give an example. [2]
- ii. Describe a method of removing temporary hardness of water. Support your answer with proper reactions. [2]
- iii. Select the basic and acid radicals in the following compounds- [3]
 a. ZnCO_3 b. NH_4Cl c. Fe_2O_3
- iv. Write three advantages of hard water. [3]
