



Estd. 1861

**BOYS' HIGH SCHOOL AND COLLEGE**  
**FIRST TERM EXAMINATION (2024-25)**  
**CLASS - IX**  
**CHEMISTRY (SCIENCE PAPER – 2)**

TIME-2HOURS

MM - 80

*Attempt all questions from Section A and any four questions from Section B.*  
*The intended marks for questions or parts 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) The correct atomic symbols for copper, calcium, cobalt, and chlorine respectively are:  
 (a) Cu, Ca, CO, Cl (b) Cu, C, Co, Cl (c) Ca, Cu, C, Cl (d) Cu, Ca, Co, Cl
- (ii) Heating of zinc nitrate is a ..... reaction?  
 (a) Decomposition (b) Combination (c) Displacement (d) Synthesis
- (iii) In  $\text{Cu}(\text{NO}_3)_2$ , the valency of copper and nitrate respectively are:  
 (a) 2 and 1 (b) 2 and 2 (c) 1 and 2 (d) 1 and 3
- (iv) Solid solutions are called:  
 (a) Allotropes (b) Alloys (c) Isotopes (d) Isotones
- (v) Which of the following is an example of efflorescent salt:  
 (a) Glauber's salt (b) Zinc chloride (c) Caustic soda (d) Quicklime
- (vi) Formula of copper(I)sulphide is:  
 (a)  $\text{Cu}_2\text{S}$  (b)  $\text{CuS}$  (c)  $\text{CuSO}_3$  (d)  $\text{CuSO}_4$
- (vii)  $2\text{KClO}_3 \xrightleftharpoons[\text{Heat}]{\text{MnO}_2} 2\text{KCl} + 3\text{O}_2$  is an example of  
 (a) decomposition (b) catalytic (c) reversible (d) all of these
- (viii) With the rise in temperature, the solubility of potassium nitrate  
 (a) Decreases (b) Increases rapidly (c) Increases slightly (d) Remain same
- (ix) A catalyst which increases the rate of a chemical reaction is called:  
 (a) promoter (b) positive catalyst (c) negative catalyst (d) Inhibitor
- (x) In  $\text{Fe}_2(\text{SO}_4)_x$ , the value of x is:  
 (a) 1 (b) 2 (c) 3 (d) 4
- (xi) Which of the following can act as dehydrating agent?  
 (a) Caustic potash (b) Calcium chloride (c) Alumina (d) Calcium oxide
- (xii) A reaction that occurs with the absorption of light energy -  
 (a) Endothermic (b) Thermal (c) Photochemical (d) Electrochemical
- (xiii) Caustic soda is common name of:  
 (a)  $\text{KOH}$  (b)  $\text{NaOH}$  (c)  $\text{Na}_2\text{CO}_3$  (d)  $\text{K}_2\text{SO}_4$
- (xiv)  $\text{BaCl}_2 + \text{ZnSO}_4 \rightarrow \text{ZnCl}_2 + \text{BaSO}_4$  is an example of .....reaction  
 (a) Neutralization (b) Displacement (c) Decomposition (d) Precipitation
- (xv) The salt which is the cause of hardness of water is:  
 (a)  $\text{Na}_2\text{SO}_4$  (b)  $\text{NaCl}$  (c)  $\text{Mg}(\text{HCO}_3)_2$  (d)  $\text{Ca}(\text{NO}_3)_2$

**Question 2.****i. Fill in the blanks:****[5]**

- a) A reaction which proceeds with the absorption of heat energy is called \_\_\_\_\_.
- b) In the absence of \_\_\_\_\_, promoter alone cannot increase the rate of reaction.
- c) Treated natural water which is fit for drinking is called \_\_\_\_\_.
- d) A desiccator is filled with \_\_\_\_\_ which is used to dry solids.
- e) Solubility of \_\_\_\_\_ increases only a little with rise in temperature.

**ii. Match the items in column I with those in column II-****[5]**

Column I	Column II
Efflorescent substance	$\text{P}_2\text{O}_5$
Anomalous solubility	$\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
Drying agent	$\text{FeCl}_3$
Deliquescent salt	$\text{Al}_2\text{O}_3$
Dehydrating agent	$\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$

**iii. Give the formula and the valency of the following radicals****[5]**

- a. Acetate      b. Hydroxide      c. Ferrous      d. Nitrate      e. Ammonium

- iv. Write the formula of following salts [5]
- a. Aluminium Sulphate      b. Calcium Chloride      c. Potassium Nitrate      d. Ammonium Hydroxide  
e. Zinc Sulphide
- v. Write the type of chemical reaction: [5]
- a.  $2\text{HCl} + \text{Mg}(\text{OH})_2 \rightarrow 2\text{H}_2\text{O} + \text{MgCl}_2$   
b.  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$   
c.  $\text{Cl}_2 + 2\text{NaBr} \rightarrow 2\text{NaCl} + \text{Br}_2$   
d.  $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$   
e.  $\text{CaO} + \text{SiO}_2 \rightarrow \text{CaSiO}_3$

**Section B (40 Marks)**

(Attempt any four questions from this Section.)

**Question 3**

- i. Define **saturated** and **unsaturated** solution. [2]  
ii. Calculate the mass percentage composition of Mn in  $\text{KMnO}_4$ . [K = 39, Mn = 55, O = 16amu] [2]  
iii. Name and explain the factor which influence the rate of **solubility**. [3]  
iv. Define **photochemical** and **electrochemical** reaction. Give one example for each. [3]

**Question 4**

- i. Define **displacement** reaction with an example. [2]  
ii. What are the disadvantages of using **Hard water**. [2]  
iii. Define types of **double displacement** reaction with example. [3]  
iv. Define: [3]  
a. Balanced chemical equation  
b. Radical  
c. Variable valency

**Question 5**

- i. The formula of the sulphate of an element M is  $\text{M}_2(\text{SO}_4)_3$ . Write the formula of its: [2]  
a) Oxide  
b) Chloride.  
ii. Write the name of any **four conditions** required to proceed a chemical reaction. [2]  
iii. Mention two differences between **drying** and **dehydrating agent** and provide example. [3]  
iv.  $\text{KI} + \text{Cl}_2 \longrightarrow \text{KCl} + \text{I}_2$  [3]  
(a) State the type of reaction.  
(b) Which non-metal is more reactive.  
(c) What will be the product formed, if KCl reacts with  $\text{I}_2$ .

**Question 6**

- i. Select the **basic** and **acidic** radical in following compounds: [2]  
a)  $\text{MgSO}_4$       b)  $\text{NaCl}$   
ii. Write **balanced** chemical reaction and state **type of reaction** for following: [2]  
Sodium chloride salt solution is added to silver nitrate reagent  
iii. Define: [3]  
a. Deliquescent substance  
b. Efflorescent substance  
c. Hygroscopic substance  
iv. Complete the following table [3]

Acid Radical → Basic Radical ↓	Chloride	Hydroxide	Sulphate
<b>Magnesium</b>	$\text{MgCl}_2$	$\text{Mg}(\text{OH})_2$	$\text{MgSO}_4$
<b>Copper (I)</b>			
<b>Iron (II)</b>			

**Question 7**

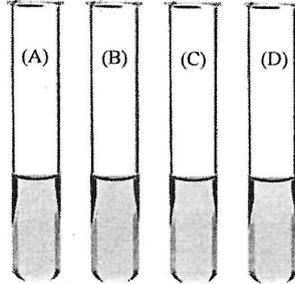
- i. Draw the **solubility curve** and explain **anomalous solubility** of Glauber's salt. [2]  
ii. Calculate molecular weight of following: [2]  
a.  $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$  [Na = 23, S = 32, O = 16, H = 1]  
b.  $\text{Al}(\text{OH})_3$  [Al = 27]  
iii. Describe the removal of **temporary** and **permanent hardness** of water. [3]  
Explain with supporting chemical reaction.

- iv. Give one example for each of the following:
- Exothermic reaction
  - Endothermic reaction
  - Combination reaction

[3]

**Question 8**

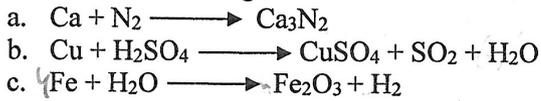
- i. Name the elements represented by following symbols: **Ag, Pb, Cr, Hg** [2]  
ii. Pick out a salt solution which is [2]
- Sparingly soluble
  - Highly soluble



Where A = Silver Chloride solution, B = Calcium Hydroxide, C= Sodium chloride and D= Silver Iodide Solution

- iii. Mention the properties of **true solution**. [3]

- iv. **Balance** the following reactions: [3]



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