



# Rudra The Practical School Booster Test (24-25)

CLASS 10 - SCIENCE (CHEMISTRY)

Date : \_\_\_/\_\_\_/2024

Time Allowed: 90 mins

Maximum Marks: 40

## General Instructions:

1. This question paper consists of 18 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 8 objective - type questions carrying 1 mark each.
4. Section B consists of 3 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 4 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 2 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
7. Section E consists of 1 source - based/case - based units of assessment of 04 marks each with sub -

## SECTION A

1. When aqueous solutions of potassium iodide and lead nitrate are mixed, an insoluble substance separates out. The chemical equation for the reaction involved is: [1]  
a)  $2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2KNO_3$   
b)  $KI + PbNO_3 \rightarrow PbI + KNO_3$   
c)  $KI + Pb(NO_3)_2 \rightarrow PbI + KNO_3$   
d)  $KI + PbNO_3 \rightarrow PbI_2 + KNO_3$
2. Slaked lime is the commercial name of: [1]  
a) Calcium carbonate  
b) Calcium hydroxide  
c) Calcium oxide  
d) Calcium bicarbonate
3. What is the nature of the new product which is formed by the action of water on quick lime? [1]  
a) Amphoteric  
b) Acidic

- c) Neutral
- 4 Four solutions P, Q, R and S have pH 2, 7, 9 and 13, respectively. Which of the solution will turn phenolphthalein pink? [1]  
 a) R and S  
 b) S only  
 c) Q and S  
 d) P only
- 5 The compounds used to prepare  $\text{NaHCO}_3$  are: [1]  
 a)  $\text{Na}_2\text{CO}_3$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{O}_2$   
 b)  $\text{NaCl}$ ,  $\text{NH}_3$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$   
 c)  $\text{NaCl}$ ,  $\text{NaOH}$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$   
 d)  $\text{NaCl}$ ,  $\text{Ca(OH)}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{CO}_2$
- 6 Washing soda is a [1]  
 a) acidic salt  
 b) neutralized salt  
 c) amphoteric salt  
 d) basic salt
- 7 **Assertion (A):** Rusting of iron metal is the most common form of corrosion.  
**Reason (R):** The effect of rusting of iron can be reversed if they are left open in sunlight. [1]  
 a) Both A and R are true and R is the correct explanation of A.  
 b) Both A and R are true but R is not the correct explanation of A.  
 c) A is true but R is false.  
 d) A is false but R is true.
- 8 **Assertion (A):** Tooth decay starts when the pH of the mouth is lower than 5.5. [1]  
**Reason (R):** Enamel starts corroding below 5.5 pH.  
 a) Both A and R are true and R is the correct explanation of A.  
 b) Both A and R are true but R is not the correct explanation of A.  
 c) A is true but R is false.  
 d) A is false but R is true.

### SECTION B (SOLVE ANY THREE)

- 9 Complete and balance the following chemical equation: [2]
1.  $\text{CaCO}_3 + \text{HCl} \rightarrow$
  2.  $\text{MnO}_2 + \text{HCl} \rightarrow$
- 10 Lead nitrate solution is added to a test tube containing potassium iodide solution. [2]
1. Write the name and colour of the compound precipitated.

2. Write the balanced chemical equation for the reaction involved. [2]
- 11 Explain the action of dilute hydrochloric acid on the following with chemical equation: [2]
1. Magnesium ribbon
  2. Sodium hydroxide
- 12 During electrolysis of brine, a gas  $G$  is liberated at anode. When this gas  $G$  is passed through slaked lime, a compound  $C$  is formed, which is used for disinfecting drinking water. [2]
1. Write the formula of  $G$  and  $C$ .
  2. State the chemical equation involved.
- 13 Name the gas evolved when dilute  $HCl$  reacts with sodium hydrogen carbonate. How is it recognised? [2]

### SECTION C (SOLVE ANY FOUR)

- 14 On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas  $X$  is formed. [3]
1. Write a balanced chemical equation of the reaction.
  2. Identify the brown gas  $X$  evolved.
  3. Identify the type of reaction.
- 15 Identify the type of reaction in the following [3]
1.  $ZnCO_3 + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2CO_3(aq)$
  2.  $2NaBr(aq) + Cl_2(g) \rightarrow 2NaCl(aq) + Br_2(aq)$
  3.  $2CuO(s) \xrightarrow{heat} 2Cu(s) + O_2(g)$
- 16 Give reason and name the type of chemical reaction taking place in each case: [3]
1. Dissolution of ammonium chloride in water leads to cooling of the glass apparatus used for dissolutions.
  2. Silver chloride powder which is white in colour, turns grey when kept in sunlight.
  3. Blue colour of copper sulphate solution fades when an iron nail is dipped inside the solution.
- 17 Write the chemical name for Plaster of Paris. Write the chemical equation of its preparation. Why should Plaster of Paris be stored in a dry place? [3]



- 18 What happens when electricity is passed through an aqueous solution of sodium chloride (called brine)? What is this process called? Write the chemical equation for the reaction involved. Name the gases evolved at the (i) anode, and (ii) cathode. Name the product formed when these gases combine. [3]

**SECTION D (SOLVE ANY TWO)**

- 19 Water is added gradually to a white solid P, a hissing sound is heard and a lot of heat is produced and product B is formed. A suspension of B in water is applied to the walls of a house during whitewashing. A clear solution of B is also used for testing carbon dioxide gas in the laboratory. [5]
1. Write the name and chemical formula of A.
  2. Write the name and chemical formula of B.
  3. What is the common name of solution of B which is used for testing carbon dioxide gas?
  4. Write chemical equation of the reaction which takes place on adding water to solid A.
  5. Which characteristic of chemical reactions is illustrated by this example?
- 20 1. Why does an aqueous solution of acid conduct electricity? [5]
2. How does the concentration of hydrogen ions  $[H_3O]^+$  changes when the solution of an acid is diluted with water?
3. Which has higher pH. A concentrated or dilute solution of HCL?
4. What would you observe on adding dil HCL acid to
- a. Sodium bicarbonate placed in a test tube.
  - b. Zinc metal in a test tube.
- 21 Solution A turns the universal indicator blue to purple whereas solution B turns the universal indicator orange to red. [5]
1. What will be the action of solution A on litmus?
  2. What will be the action of solution B on litmus?
  3. Name any two substances which can give solutions like A.
  4. Name any two substances which can give solutions like B.
  5. What sort of reaction takes place when solution A reacts with solution B?

## SECTION E

22 Read the following text carefully and answer the questions that follow:

[4]

The teacher while conducting practicals in the laboratory divided the students into three groups and gave them various solutions to find out their pH and classify them into acidic, basic and neutral solutions.

Group A - Lemon juice, vinegar, colourless aerated drink

Group B - Tomato juice, coffee, ginger juice

Group C - Sodium hydroxide, sodium chloride, lime water

1. For the solutions provided, which group is/are likely to have pH value (i) less than 7, and (ii) greater than 7? (1)
2. List two ways of determining pH of a solution. (1)
3. Explain, why the sour substances such as lemon juice are effective in cleaning the tarnished copper vessels. (2)

**OR**

**pH has great importance in our daily life.** Justify this statement by giving two examples. (2)