

Q1. Match the acids given in Column (A) with their correct source given in Column (B)

Column (A)	Column (B)
(a) Lactic	(i) Tomato
(b) Acetic acid	(ii) Lemon
(c) Citric acid	(iii) Vinegar
(d) Oxalic acid	(iv) Curd

Q2. Match the important chemicals given in Column (A) with the chemical formulae given in Column (B)

Column (A)	Column (B)
(a) Plaster of Paris	(i) $\text{Ca}(\text{OH})_2$
(b) Gypsum	(ii) $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$
(c) Bleaching Powder	(iii) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
(d) Slaked Lime	(iv) CaOCl_2

Q3. What will be the action of the following substances on litmus paper?

Dry HCl gas, Moistened NH_3 gas, Lemon juice Carbonated soft drink, Curd, Soap solution.

Q4. Name the acid present in ant sting and give its chemical formula. Also give the common method to get relief from the discomfort caused by the ant sting.

Q5. What happens when nitric acid is added to egg shell?

Q6. A student prepared solutions of (i) an acid and (ii) a base in two separate beaker. She forgot to label the solutions and litmus paper is not available in the laboratory. Since both the solutions are colourless, how will she distinguish between the two?

Q7. How would you distinguish between baking powder and washing soda by heating?

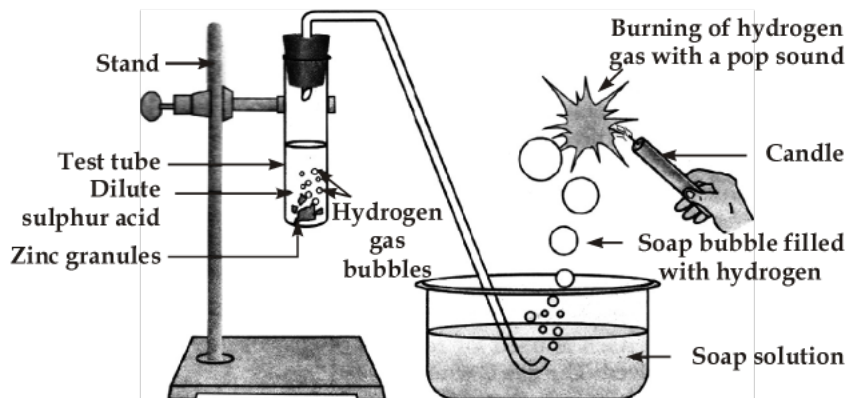
Q8. Salt A commonly used in bakery products on heating gets converted into another salt B which itself is used for removal of hardness of water and a gas C is evolved. The gas C when passed through lime water, turns it milky. Identify A, B and C.

Q9. In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as by product. The gas X reacts with lime water to give a compound Y which is used as a bleaching agent in chemical industry. Identify X and Y giving the chemical equation of the reactions involved.

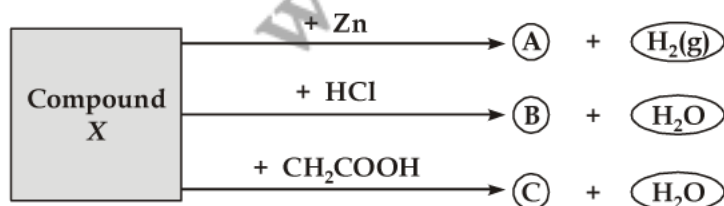
Q10. Fill in the missing data in the following table:

Name of the salt	Formula	Salt obtained from	
		Base	Acid
(a) Ammonium chloride	NH_4Cl	NH_3OH	–
(b) Copper sulphate	–	–	H_2SO_4
(c) Sodium chloride	NaCl	NaOH	–
(d) Magnesium nitrate	$\text{Mg}(\text{NO}_3)_2$	–	HNO_3
(e) Potassium sulphate	K_2SO_4	–	–
(f) Calcium nitrate	$\text{Ca}(\text{NO}_3)_2$	$\text{Ca}(\text{OH})_2$	–

- Q11.** What are strong and weak acids? In the following list of acids, separate strong acids from weak acids.
Hydrochloric acid, citric acid, acetic acid, nitric acid, formic acid, sulphuric acid.
- Q12.** When zinc metal is treated with a dilute solution of a strong acid, a gas is evolved, which is utilised in the hydrogenation of oil. Name the gas evolved. Write the chemical equation of the reaction involved and also write a test to detect the gas formed.
- Q13.** In the following schematic diagram for the preparation of hydrogen gas as shown in figure, what would happen if following changes are made?



- (a) In place of zinc granules, same amount of zinc dust is taken in the test tube.
- (b) Instead of dilute sulphuric acid, dilute hydrochloric acid is taken.
- (c) In place of zinc, copper turnings are taken.
- (d) Sodium hydroxide is taken in place of dilute sulphuric acid and the tube is heated.
- Q14.** For making cake, baking powder is taken. If at home your mother uses baking soda instead of baking powder in cake.
- (a) How will it affect the taste of the cake and why?
- (b) How can baking soda be converted into baking powder?
- (c) What is the role of tartaric acid added to baking soda?
- Q15.** A metal carbonate X on reacting with an acid gives a gas which when passed through a solution Y gives the carbonate back. On the other hand, a gas G that is obtained at anode during electrolysis of brine is passed on dry Y. It gives a compound Z, used for disinfecting drinking water. Identify X, Y, G and Z.
- Q16.** A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound is also a by-product of chloralkali process. Identify B. What type of reaction occurs when B is treated with an acidic oxide? Write a balanced chemical equation for one such solution.
- Q17.** A sulphate salt of Group 2 element of the Periodic Table is a white, soft substance, which can be moulded into different shapes by making its dough. When this compound is left in open for some time, it becomes a solid mass and cannot be used for moulding purposes. Identify the sulphate salt and why does it show such a behaviour? Give the reaction involved.
- Q18.** Identify the compound X on the basis of the reactions given below. Also, write the name and chemical formulae of A, B and C.



S1. (a) – (iv) (b) – (iii) (c) – (ii) (d) – (i)

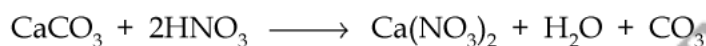
S2. (a) – (ii) (b) – (iii) (c) – (iv) (d) – (i)

S3. Substance Action on Litmus paper

Dry HCl gas	No change
Moistened NH ₃ gas	Turns red to blue
Lemon juice	Turns blue to red
Carbonated soft drink	Turns blue to red
Curd	Turns blue to red
Soap solution	Turns red to blue

S4. The acid present in ant sting is methanoic acid (formic acid). The chemical formula is HCOOH. To get relief one should apply any available basic salt *e.g.*, baking soda (NaHCO₃) on it.

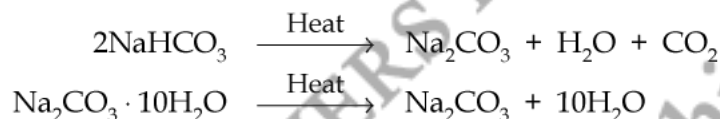
S5. Egg shells contain calcium carbonate. When nitric acid is added to it, carbon dioxide gas is evolved. The reaction can be given as



S6. **Hint:** Using chemical indicator like phenolphthalein or natural indicators like turmeric, china rose etc.

S7. The chemical formula of baking powder is sodium hydrogencarbonate (NaHCO₃). Whereas, that of washing soda is sodium carbonate (Na₂CO₃ · 10H₂O)

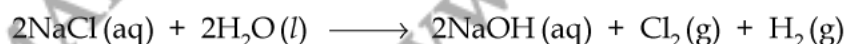
Sodium hydrogencarbonate on heating gives CO₂ gas which will turn lime water milky whereas no such gas is obtained from sodium carbonate.



S8. Baking powder (NaHCO₃), salt A is commonly used in bakery products. On heating it forms sodium carbonate (Na₂CO₃), B and CO₂ gas C is evolved. When CO₂ gas is passed through lime water it forms calcium carbonate (CaCO₃), which is slightly soluble in water making it milky.

A – NaHCO₃; B – Na₂CO₃; C – CO₂ gas.

S9. In the manufacture of sodium hydroxide, hydrogen gas and chlorine gas (X) are formed as by-products. When chlorine gas (X) reacts with lime water, it forms calcium oxychloride (bleaching powder) Y. The reactions are:



x → Cl₂ (chlorine gas)



Y – Calcium oxychloride (bleaching powder)

S10.

Salt obtained from

Name of the salt	Formula	Base	Acid
(a) Ammonium chloride	NH ₄ Cl	NH ₃ OH	HCl
(b) Copper sulphate	CuSO ₄	Cu(OH) ₂	H ₂ SO ₄
(c) Sodium chloride	NaCl	NaOH	HCl
(d) Magnesium nitrate	Mg(NO ₃) ₂	Mg(OH) ₂	HNO ₃
(e) Potassium sulphate	K ₂ SO ₄	KOH	H ₂ SO ₄
(f) Calcium nitrate	Ca(NO ₃) ₂	Ca(OH) ₂	HNO ₃

S11. In aqueous solutions strong acids ionise completely and provide hydronium ions. On the other hand weak acids are partially ionised and an aqueous solution of same molar concentration provides a much smaller concentration of H₃O⁺ ions.

Strong acids: Hydrochloric acid, sulphuric acid, nitric acid.

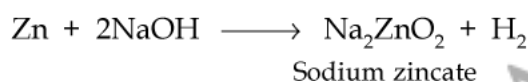
Weak acid: Citric acid, acetic acid, formic acid.

S12. When zinc reacts with dilute solution of strong acid, it forms salt and hydrogen gas is evolved.

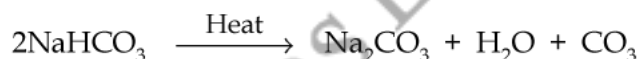


When a burning splinter is brought near the mouth of the test tube, the gas burns with a pop sound.

- S13.** Hint: (a) Hydrogen gas will evolve with greater speed.
 (b) Almost same amount of gas is evolved.
 (c) Hydrogen gas is not evolved.
 (d) If sodium hydroxide is taken, hydrogen gas will be evolved



S14. (a) Baking soda is sodium hydrogencarbonate. On heating, it is converted into sodium carbonate which is bitter to taste

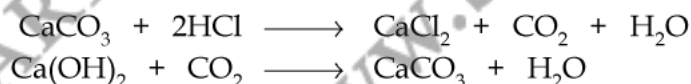


- (b) Baking soda can be converted into baking powder by the addition of appropriate amount of tartaric acid to it.
 (c) The role of tartaric acid is to neutralise sodium carbonate and cake will not taste bitter.

S15. The gas evolved at anode during electrolysis of brine is chlorine (G). When chlorine gas is passed through dry Ca(OH)₂ (Y) produces bleaching powder (Z) used for disinfecting drinking water.



Since Y and Z are calcium salts, therefore X is also a calcium salt and is calcium carbonate.



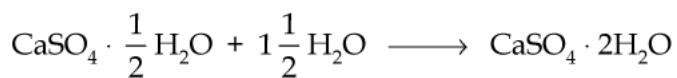
S16. Sodium hydroxide (NaOH) is a commonly used base and is hygroscopic, that is, it absorbs moisture from the atmosphere and becomes sticky.

The acidic oxides react with base to give salt and water. The reaction between NaOH and CO₂ can be given as



S17. The substance which is used for making different shapes is Plaster of Paris. Its chemical name is calcium sulphate hemihydrate ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$). The two formula unit of CaSO_4 share one molecule of water. As a result, it is soft.

When it is left open for some time, it absorbs moisture from the atmosphere and forms gypsum, which is a hard solid mass.



Plaster of Paris
(Soft)
(Sulphate salt)

Gypsum
(Hard mass)

- S18.** X – NaOH (Sodium hydroxide)
A – Na_2ZnO_2 (Sodium zincate)
B – NaCl (Sodium chloride)
C – CH_3COONa (Sodium acetate)

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