

5. Acids, Base, Salts.

Q.1) MCQ.

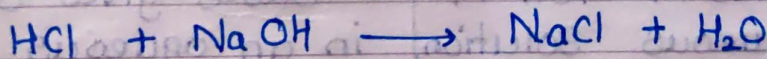
- 1) → a) NaOH
- 2) → c) NaOH
- 3) → a) acid
- 4) → b) KCl
- 5) → c) neutral
- 6) → a) Na
- 7) → c) HCl
- 8) → a) aluminium carbonate
- 9) → b) acid
- 10) → b) H_2SO_4

Q.2)

- 1) → Acids are substances which can increase the concentration of (H^+) ions in an aqueous solution.
eg. HCl, H_2SO_4
- 2) → Bases are the substances insoluble in water, metal oxides are basic in nature.
eg. $Al(OH)_3$, $Cu(OH)_2$
- 3) → Alkalies are substances which can increase the concentration of hydroxide (OH^-) ions in an aqueous solution.
eg. NaOH, KOH

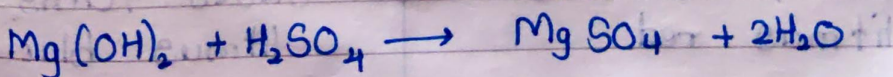
- 4) Acid and alkali react with each other to nullify their individual property. Such chemical reactions; called as neutralisation reaction.
- 5) Antacids are the medicines used to reduce acidity in stomach. Chemicals like Calcium carbonate, aluminium carbonate, aluminium hydroxide, sodium bicarbonate and magnesium hydroxide are main components of antacids.
- 6) pH value is the specific value given for specific acids and bases.
 IF pH value of a substance is less than 7 then substance is acidic.
 IF pH value of a substance more than 7, then substance is alkaline / base.
 IF pH is 7, substance is neutral.
- 7) pH meter is a device used for determination of pH of aqueous solutions.

8)



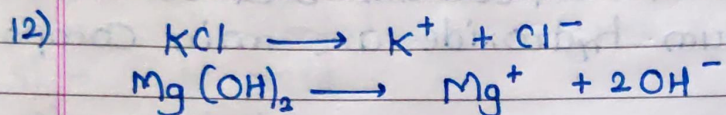
The above reaction is neutralisation reaction.

9)



- 10) Cuprous ion :- Cu^+
 Magnesium sulphate :- MgSO_4
 Calcium carbonate :- CaCO_3
 Aluminium hydroxide :- Al(OH)_3

11) Salts are electrically neutral because the sum of charge of positive ions and negative ions in a salt will be zero.



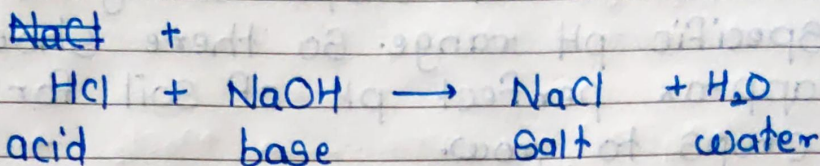
Q.3)

| 1) | Name of acid | Chemical formula |
|----|-------------------|-------------------------|
| 1. | Nitric acid | HNO_3 |
| 2. | Sulphuric acid | H_2SO_4 |
| 3. | Hydrochloric acid | HCl |
| 4. | Carbonic acid | H_2CO_3 |

| 2) | Acid | Base |
|----|---|--|
| 1. | Acid gives H^+ ion in an aqueous solution. | 1. Bases gives OH^- ion in an aqueous solution. |
| 2. | Sour in taste. | 2. Bitter in taste. |
| 3. | acid turns blue litmus red. | 3. Bases turns red litmus blue. |
| 4. | e.g. HNO_3 , HCl | e.g. NaOH , Al(OH)_3 , KOH |

3) Acid and alkali reacts together to form Salt and water, and they nullify their individual properties, such reactions is known as Neutralisation reaction.

e.g.

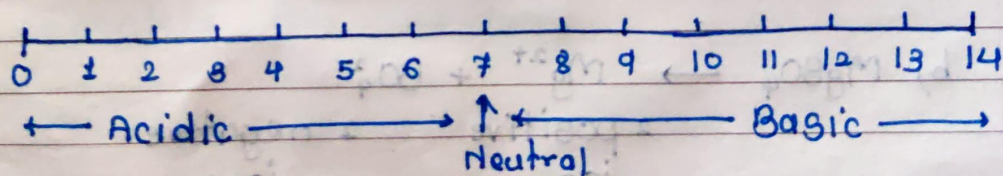


4) pH value is the scientific method for finding acidic/alkaline nature of substances. pH value can be determined by many ways. one of those way is by using litmus paper method.

If we dip Blue litmus paper in acidic solⁿ it turns red and if dip in alkaline solⁿ, it remains unchanged.

If we dip red litmus paper in alkaline solⁿ it turns blue and in acidic solⁿ, it remains unchanged.

5) The danish scientist Sorensen devised pH scale. The pH scale was devised on the basis of H^+ ion concentration in solution



pH Scale (25°C)

6) The nature of soil is different everywhere on earth's surface. The availability and growth of crops depends on availability of water and nature of soil.

Different crops can grow within a specific pH range. So there should be approx perfect pH of soil for a specific crops to grow.

Soil having pH range 6.5 to 7.2 suitable for majority of crops.

7)

1. Zinc ion

Zn^{2+}

2. Sulphate ion

SO_4^{2-}

3. Phosphate ion

PO_4^{3-}

4. Cupric ion

Cu^{2+}

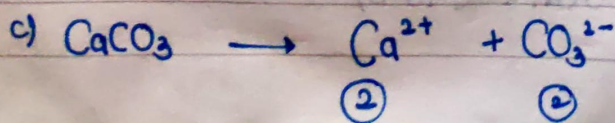
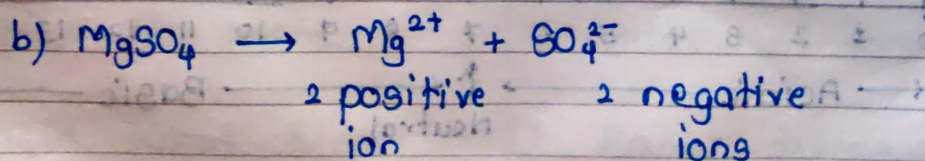
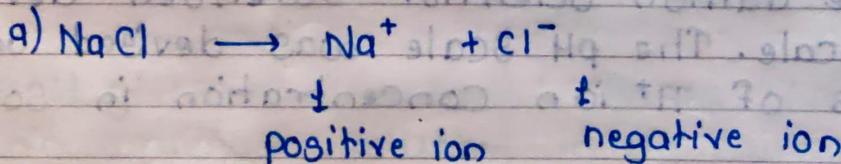
5. Hydroxide ion

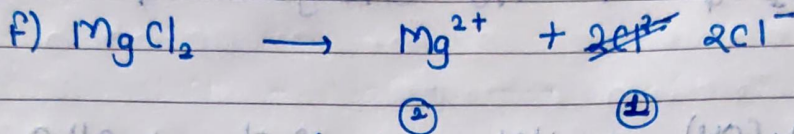
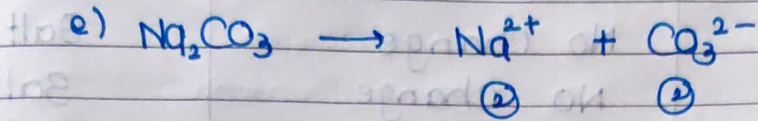
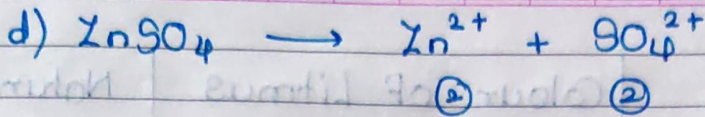
OH^-

6. Carbonate ion

CO_3^{2-}

8)





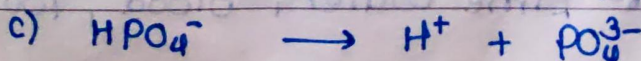
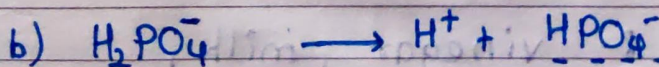
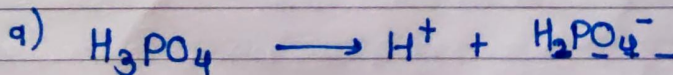
9) Uses of Salts:-

1. Salts are used in making of freezing mixture.
2. Salts used as fungicides.
3. Salts are used to manufacture glass.
4. Salts Na_2CO_3 used as detergent.
5. NaCl used for preserving food.
6. NaHCO_3 used in baking and in fire extinguisher.
7. CaCO_3 used in construction and purification of iron.

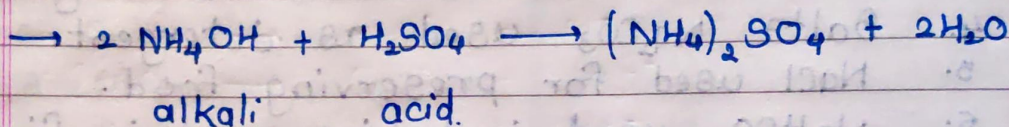
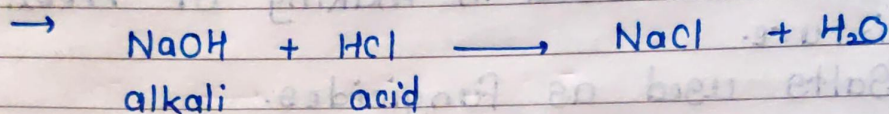
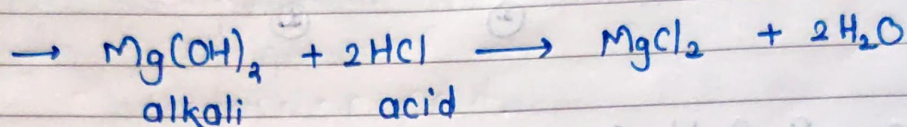
eg. NaCl , CaCO_3 , NaHCO_3 , Na_2CO_3 .

Q.4)

1) Complete the reaction.



| 2) Salt | Colour of Litmus | Nature of Sub. |
|--------------------|------------------|----------------|
| (A) $MgCl_2$ | No Change | Salt |
| (B) $NaCl$ | No Change | Salt |
| (C) $(NH_4)_2SO_4$ | No Change | Salt |



3)

| | Chemical names |
|--------------------|--------------------------------|
| i) $Mg(H_2PO_4)_2$ | Magnesium dihydrogen phosphate |
| ii) $MgHPO_4$ | Magnesium hydrogen phosphate |
| 3) $Mg_3(PO_4)_2$ | trimagnesium diphosphate |
| 4) $NaHCO_3$ | Sodium bicarbonate |
| 5) Na_2CO_3 | Sodium carbonate |

4)

a) \rightarrow Acids :- vinegar, milk,
 Alkali :- Lime water, Blood, Tooth paste.

- b) Blood is slightly basic cause its pH is 7.3 nearest to neutral pH.
- c) Strong bases are Lime water (10.3) and tooth paste (8.3).
- d) Strong acid is vinegar pH (4.2)
- e) pH of milk is 6.4, when milk converts into curd, lactic acid is formed. So pH 6.4 get reduced.

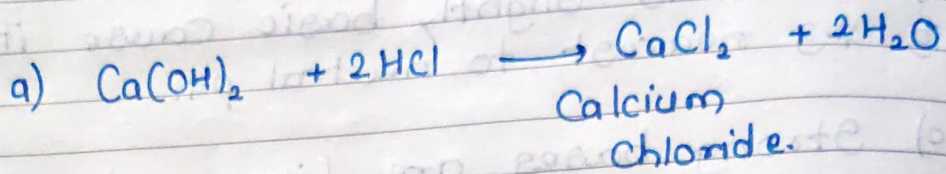
| Common names | Chemical names |
|-----------------|--|
| 1. Gypsum | a. NaHCO_3 |
| 2. Baking soda | b. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ |
| 3. Washing soda | c. $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ |
| 4. Blue vitriol | d. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ |
| 5. Sylvine | e. KCl |
| 6. Table salt | f. NaCl |

Answers :

- 1 → b
2 → a
3 → d
4 → c
5 → e
6 → f

Baking soda use for baking.
washing soda used to glass manufacturing.

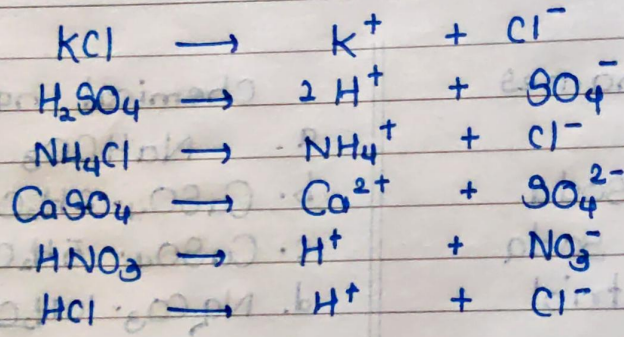
6)



b) above eqⁿ is for preparation of Calcium Chloride.

c) Sulphuric acid.

7)



- 8)
- PO_4^{3-} - Phosphate ion
 - CO_3^{2-} - Carbonate ion
 - Cu^{2+} - Cupric ion
 - Fe^{3+} - ferric ion
 - Cu^+ - Cuprous ion
 - HCO_3^- - Bicarbonate ion
 - NO_3^- - Nitrate ion
 - H_2PO_4^- - Dihydrogen phosphate ion
 - HSO_4^- - Bisulphate ion