

TYPES OF INORGANIC COMPOUNDS

1. Write the formula of following acidic oxides.

- A. sulfur dioxide
- B. sulfur trioxide
- C. carbon dioxide
- D. diphosphorus pentoxide
- E. silicon dioxide
- F. dinitrogen pentoxide

2. Select the oxides from the list below and name them, and calculate the oxidation states of elements in the oxides;

H₂S, SO₂, NaOH, PH₃, SO₃, HNO₃, Cl₂O, K₂SO₄, N₂O₃, CH₄, N₂O₅, Cl₂O₇.

3. Write down the formation reaction of the oxides from the elements below;

- A. carbon (IV)
- B. phosphorus (V)
- C. sulfur (IV)
- D. silicon (IV)
- E. Nitrogen (V)

4. Select the acids below.

H₂SO₄, NaOH, CH₄, HNO₃, NH₃, H₃PO₄, KCl, H₂CO₃, Na₂SO₄, H₂SO₃, CO₂, H₂, H₂SiO₃, N₂O₅.

5. Complete the following transformations with acidic oxides or acids.

- A. CO₂ + ? → H₂CO₃
- B. ? + ? → H₂SO₄
- C. N₂O₅ → ? + ?
- D. ? + ? → H₃PO₄
- E. SO₂ + ? → ?
- F. ? + ? → H₂SiO₃.

6. Write down the reaction equations for following transformations.

- A. SO₂ → H₂SO₃
- B. P₂O₅ → H₃PO₄
- C. N₂O₅ → HNO₃
- D. SO₃ → H₂SO₄
- E. CO₂ → H₂CO₃
- F. H₂SiO₃ → SiO₂
- G. H₂SO₃ → SO₂
- H. H₂CO₃ → CO₂

7. Write down the reaction equations for the following transformations below, and name the products

- A. S → SO₂ → H₂SO₃
- B. P → P₂O₅ → H₃PO₄
- C. C → CO₂ → H₂CO₃
- D. S → SO₂ → SO₃ → H₂SO₄

8. Write down the reaction equations for the following transformations below.

- A. phosphorus → diphosphorus pentoxide → phosphoric acid
- B. Sulfur → sulfur dioxide → sulfur trioxide → sulfuric acid

9. Calculate the mass of nitric acid which is obtained from the dissolution of 2 mol of dinitrogen pentoxide in water.

10. Write down the formula of following basic oxides.

- A. Sodium oxide
- B. Calcium oxide
- C. Magnesium oxide
- D. Copper(II) oxide
- E. Iron(III) oxide
- F. Barium oxide

11. Select the oxides and name them.

Li₂O, NaCl, KOH, FeO, Al(OH)₃, Fe₂O₃, H₂SO₄, CaO, HBr, H₂O, Na₂CO₃, Cu₂O.

12. Write down the reaction equations that produce oxides by oxidation of

- A. Lithium B. Calcium C. Barium
- D. Aluminum E. Zinc F. Magnesium.

13. Write down the formula of following bases,

- A. Sodium hydroxide
- B. Potassium hydroxide
- C. Calcium hydroxide
- D. Iron (III) hydroxide
- E. Copper (II) hydroxide
- F. Iron (II) hydroxide

14. Select the bases from the list, and name them, LiOH, H₂SO₃, Na₂O, Ba(OH)₂, CaBr₂, Mg(OH)₂, FeO, Al₂O₃, Al(OH)₃, Fe(OH)₃, H₂O, Cu(OH)₂.

15. Complete the following reaction equations;

- A. Li₂O + ? → LiOH,
- B. Na₂O + H₂O → ? ,
- C. ? + H₂O → KOH,
- D. ? + ? → Ba(OH)₂,
- E. CaO + ? → Ca(OH)₂,
- F. Cu(OH)₂ → CuO + ? ,
- G. Al(OH)₃ + heat → Al₂O₃ + H₂O ,
- H. Fe(OH)₂ + heat → ? + ? ,

16. Perform the following transformations, name the substances produced and give the type of reactions;

- A. Li → Li₂O → LiOH ,
- B. Ba → BaO → Ba(OH)₂ ,
- C. Ca → CaO → Ca(OH)₂ ,
- D. Cu(OH)₂ → CuO ← Cu ,
- E. Al(OH)₃ → Al₂O₃ ← Al ,
- F. Zn(OH)₂ → ZnO ← Zn ,

17. Write down the reaction equation given below;
Barium \rightarrow barium oxide \rightarrow barium hydroxide;
Calculate the mass of barium hydroxide produced from
548 g of barium.

18. Write down the reaction equation given below;
 $\text{Cu(OH)}_2 \rightarrow \text{CuO}$,
Calculate the mass of Cu(OH)_2 necessary to obtain 160 g
of copper (II) oxide.

19. Select the salts from the list, and name them.
 $\text{Mg(NO}_3)_2$, HCl , CaBr_2 , SO_2 , Ba(OH)_2 , Mg(OH)_2 , KCl ,
 ZnSO_4 , HNO_3 , Na_2SO_3 , CuS

20. Write the formulas of the salts.

- A. Zinc chloride
- B. Magnesium bromide
- C. Aluminum iodate
- D. Sodium sulfide
- E. Potassium iodide
- F. Iron (III) bromide
- G. Sodium carbonate
- H. Copper (II) sulfate
- I. Calcium nitrate
- J. Magnesium phosphate
- K. Silver nitrate

21. Complete the reactions where possible. Use the metal
activity table and name the acids and the salts.

- A. $\text{Mg} + \text{HCl} \rightarrow$
- B. $\text{Ag} + \text{HBr} \rightarrow$
- C. $\text{Al} + \text{H}_2\text{SO}_4 \rightarrow$
- D. $\text{Cu} + \text{HCl} \rightarrow$
- E. $\text{Zn} + \text{H}_3\text{PO}_4 \rightarrow$
- F. $\text{Hg} + \text{HCl} \rightarrow$
- G. $\text{Ca} + \text{HI} \rightarrow$
- H. $\text{Au} + \text{H}_2\text{SO}_4 \rightarrow$