

The s-block Elements – Alkaline Earth Metals

Q.1. Some of the Group 2 metal halides are covalent and soluble in organic solvents. Among the following metal halides, the one which is soluble in ethanol is

- a) BeCl_2
- b) MgCl_2
- c) CaCl_2
- d) SrCl_2

Q.2. Thermal stability of alkaline earth metal carbonates decreases in order

- a) $\text{CaCO}_3 > \text{SrCO}_3 > \text{MgCO}_3 > \text{BaCO}_3$
- b) $\text{BaCO}_3 > \text{SrCO}_3 > \text{MgCO}_3 > \text{CaCO}_3$
- c) $\text{BaCO}_3 > \text{SrCO}_3 > \text{CaCO}_3 > \text{MgCO}_3$
- d) None of these

Q.3. Dead burnt plaster is

- a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- b) $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$
- c) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$
- d) CaSO_4

Q.4. Which of the following is least soluble in water?

- a) BeSO_4
- b) BaSO_4
- c) CaSO_4
- d) SrSO_4

Q.5. Which of the following oxides is not expected to react with sodium hydroxide?

- a) CaO
- b) SiO_2
- c) BeO
- d) B_2O_3

Q.6. A metal M readily forms its sulphate MSO_4 which is water soluble. It forms its oxide MO which becomes inert on heating. It forms an insoluble hydroxide M(OH)_2 which is soluble in NaOH solution. Then M is

- a) Mg
- b) Ca
- c) Be
- d) Ba

Q.7. Which of the following on thermal decomposition yields a basic as well as acidic oxide ?

- a) NaNO_3
- b) KClO_3
- c) CaCO_3
- d) NH_4NO_3

Q.8. Disodium hydrogen phosphate in presence of NH_4Cl and NH_4OH gives a white precipitate with a solution of Mg^{2+} ion. The precipitate is :

- a) MgNH_4PO_4
- b) MgHPO_4
- c) $\text{Mg}(\text{H}_2\text{PO}_4)_2$
- d) $\text{Mg}_3(\text{PO}_4)_2$

Q.9. Mixture of MgCl_2 and MgO is called

- a) Portland cement
- b) Sorel's cement
- c) Double salt
- d) None of these

Q.10. Which of the following compounds has the lowest melting point ?

- a) CaCl_2
- b) CaBr_2
- c) CaI_2
- d) CaF_2

Q.11. Which of the ions have maximum hydration energy?

- a) Sr^{2+}
- b) Ca^{2+}
- c) Mg^{2+}
- d) Be^{2+}

Q.12. Plaster of Paris (POP) is

- a) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$
- b) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- c) CaSO_4
- d) $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$

Q.13. The elements of group-2 are called alkaline earth metals because

- a) they are alkaline in nature
- b) they occur in earth's crust and form alkaline salts
- c) their oxides are alkaline and occur in earth's crust
- d) these are s-block elements.

Q.14.The carbide of which of the following metals on hydrolysis gives allylene or propyne?

- a) Be
- b) Ca
- c) Al
- d) Mg

Q.15.Which of the following has lowest melting point?

- a) SrF_2
- b) BeF_2
- c) MgF_2
- d) CaF_2

Q.16.A firework gives out crimson coloured light. It contains a salt of

- a) Be
- b) Mg
- c) Ca
- d) Sr

Q.17.Which of the following metal ions plays an important role in muscle contraction?

- a) K^+
- b) Na^+
- c) Ca^{2+}
- d) Mg^{2+}

Q.18.Property of the alkaline earth metals that increases with their atomic number is

- a) solubility of their hydroxides in water
- b) solubility of their sulphates in water
- c) ionization energy
- d) electronegativity

Q.19.Alkaline earth metal compounds are less soluble in water than corresponding alkali metal compounds because former have

- a) lower lattice energy
- b) higher I.P.
- c) higher covalent character
- d) lower covalent character

Q.20.When hydrated $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ is strongly heated

- a) MgO is formed
- b) Mg(OH)_2 is formed
- c) Mg(OH)Cl is formed
- d) Anhydrous MgCl_2 is formed

Q.21. The compound A on heating gives a colourless gas and a residue that is dissolved in water to obtain B. Excess of CO_2 is bubbled through aqueous solution of B, C is formed which is recovered in the solid form. Solid C on gentle heating gives back A. The compound is

- a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- b) CaCO_3
- c) Na_2CO_3
- d) K_2CO_3

Q.22. In which of the following the hydration energy is higher than the lattice energy?

- a) MgSO_4
- b) RaSO_4
- c) SrSO_4
- d) BaSO_4

Q.23. Which of the following metal carbonates decomposes on heating ?

- a) MgCO_3
- b) Na_2CO_3
- c) K_2CO_3
- d) Rb_2CO_3

Q.24. Which of the following is used as a scavenger in metallurgy ?

- a) Be
- b) Mg
- c) Ca
- d) Ba

Q.25. The electric cookers have a coating that protects them against fire. The coating is made of

- a) heavy lead
- b) magnesium oxide
- c) zinc oxide
- d) sodium sulphate