

Chemistry Study Materials for Class 11

(NCERT Chemistry Textbook Solved Questions of Chapter- 10)

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s- block element

Question 29. How would you explain the following observations?

(i) BeO is almost insoluble but BeSO₄ is soluble in water.

(ii) BaO is soluble but BaSO₄ is insoluble in water.

(iii) LiI is more soluble than KI in ethanol.

Answer: (i) Lattice energy of BeO is comparatively higher than the hydration energy. Therefore, it is almost insoluble in water. Whereas BeSO₄ is ionic in nature and its hydration energy dominates the lattice energy.

(ii) Both BaO and BaSO₄ are ionic compounds but the hydration energy of BaO is higher than the lattice energy therefore it is soluble in water.

(iii) Since the size of Li⁺ ion is very small in comparison to K⁺ ion, it polarises the electron cloud of I⁻ ion to a great extent. Thus LiI dissolves in ethanol more easily than the KI.

Question 30. Which of the alkali metal is having least melting point?

(a) Na

(b) K

(c) Rb

(d) Cs

Answer: Size of Cs is the biggest thus, its melting point is the lowest, (d) is correct.

Question 31. Which one of the following alkali metals gives hydrated salts?

(a) Li

(b) Na

(c) K

(d) Cs

Answer: Li⁺ is the smallest. Thus, it has the highest charge density and hence attracts the water molecules more strongly.

Question 32. Which one of the following alkaline earth metal carbonates is thermally most stable?

(a) MgCO₃

(b) CaCO₃

(c) SrCO₃

(d) BaCO₃

Answer: (d) BaCO₃

Very Short Answer Type Questions

Question 1. Name the alkali metal which shows diagonal relationship with mg?

Answer: Li.

Question 2. Why alkali and alkaline earth metals cannot be obtained by chemical reduction method?

Answer: Because alkali and alkaline earth metals are themselves stronger reducing agents than the majority of other reducing agents.

Question 3. Name the compounds used for the manufacture of washing soda by Solvay process.

Answer: NaCl, CaCO₃ and NH₃.

Question 4. Which electrolyte is used to obtain sodium in Castner's process?

Answer: Fused NaOH.

Question 5. What happens when crystals of washing soda are exposed to air?

Answer: Monohydrate (Na₂CO₃·H₂O) is formed as a result of efflorescence.

Question 6. Name the alkaline earth metals whose salt do not impart colour to a non-luminous flame.

Answer: Beryllium does not impart colour to a non-luminous flame.

Question 7. What is dead burnt plaster?

Answer: It is anhydrous calcium sulphate (CaSO₄).

Question 8. What is Quick lime? What happens when it is added to water?

Answer: CaO is quick lime. When it is added to water, Ca(OH)₂ is formed.

Question 9. Arrange the following in the increasing order of solubility in water.

MgCl₂, CaCl₂, SrCl₂, BaCl₂

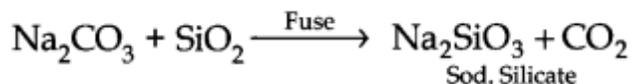
Answer: BaCl₂ < SrCl₂ < CaCl₂ < MgCl₂

Question 10. Give the chemical formula of Epsom salt.

Answer: MgSO₄·7H₂O

Question 11. How would you prepare sodium silicate from silica?

Answer:



Question 12. What happens when sodium metal is heated in free supply of air?

Answer: Sodium peroxide is formed. $2\text{Na} + \text{O}_2 \longrightarrow \text{Na}_2\text{O}_2$

Question 13. What is the general name for elements of group 1?

Answer: Alkali metals.

Question 14. Why are alkali metals soft?

Answer: Since the atoms of alkali metals have bigger kernels and smaller number of valence electrons, the metallic bonds in them are very weak and hence are soft.

Question 15. What do you mean by diagonal relationship in periodic table?

Answer: The resemblance of the first element of second period with diagonally situated element of neighbouring element is called diagonal relationship.

Question 16. Why is BeCl_2 soluble in organic solvent?

Answer: Since BeCl_2 is a covalent compound it is soluble in organic solvent.

Question 17. Why do alkali metals give characteristic flame colouration?

Answer: Alkali metals due to low ionization energy absorb energy from visible region to radiate complementary colour.

Question 18. Why is the solution of alkali metals in liquid ammonia conducting in nature?

Answer: Due to ammoniated electrons and cations.

Question 19. Which is more basic NaOH or $\text{Mg}(\text{OH})_2$?

Answer: NaOH is more basic.

Question 20. Which alkaline earth metals do not impart colour to the flame?

Answer: Be and Mg.

Question 21. What is soda ash?

Answer: Soda ash is anhydrous sodium carbonate (Na_2CO_3).
