

**PRAADIS EDUCATION**  
**CHEMISTRY-XII**  
**S- BLOCK ELEMENTS**  
**OBJECTIVES**

1. Which of the following mixture is known as fusion mixture?

- a) Sodium carbonate and potassium chloride
- b) Sodium carbonate and potassium carbonate
- c) Sodium bicarbonate and sodium carbonate
- d) Potassium bicarbonate and sodium carbonate

Answer: b

Explanation: The mixture of sodium carbonate and potassium carbonate together is known as a fusion mixture. Only Potassium carbonate is as known as pearl ash. It is sometimes used in quantitative analysis.

2. The solubility of carbonates \_\_\_\_\_ down the group.

- a) is irregular
- b) remains the same
- c) decreases
- d) increases

Answer: d

Explanation: The solubility of carbonates and bicarbonates of alkali metals increases on moving down the group, this is due to the increase in lattice enthalpies. The order is as follows in an increasing way of lithium bicarbonate, sodium bicarbonate, potassium bicarbonate, rubidium bicarbonate, and cesium bicarbonate.

3. On heating Lithium nitrate which of the following compound is not formed?

- a) Hydrogen
- b) Lithium oxide
- c) Nitrous oxide
- d) Oxygen

Answer: a

Explanation: On heating, lithium nitrate decomposes to give nitrous oxide, oxygen, and lithium oxide whereas the nitrates of other alkali metals decompose on heating and give nitrites and oxygen. Therefore hydrogen isn't formed.

4. Which of the following is called as Chile saltpeter?

- a) Rubidium nitrate
- b) Sodium nitrate
- c) Lithium nitrate
- d) Potassium Nitrate

Answer: b

Explanation: Sodium nitrate ( $\text{NaNO}_3$ ) is called Chile saltpeter and potassium nitrate ( $\text{KNO}_3$ ) is called Indian saltpeter. Chile saltpeter which is Sodium nitrate is commonly and naturally found in Chile and Peru.

5. Which of the following as a chemical formula of Glauber's salt?

- a)  $\text{NaO}_4 \cdot 10\text{H}_2\text{O}$
  - b)  $\text{NaSO}_4 \cdot 1\text{H}_2\text{O}$
  - c)  $\text{NaSO}_4 \cdot 10\text{H}_2\text{O}$
  - d)  $\text{NaSO} \cdot 10\text{H}_2\text{O}$
- Answer: c

Explanation: Glauber's salt contains two atoms of sodium, one atom of sulfur, 4 atoms of oxygen, and 10 moles of water.

It is the sulfate of sodium and is represented chemically as  $\text{NaSO}_4 \cdot 10\text{H}_2\text{O}$ . It is soluble in water.

6. Which of the following alkali metal cannot form superoxide?

- a) Potassium
- b) Lithium
- c) Sodium
- d) Cesium

Answer: b

Explanation: All the alkali metals when heated with oxygen form different types of oxides. Lithium forms lithium oxide and some amount of lithium peroxide, while Sodium, Potassium, rubidium, and cesium can form superoxide.

7. Which of the following is true regarding the basic strength?

- a) Potassium oxide is more basic than cesium oxide
- b) Lithium oxide is more basic than sodium oxide
- c) Cesium oxide is more basic than potassium oxide
- d) Sodium oxide is more basic than cesium oxide

Answer: c

Explanation: All the oxides, peroxides and superoxides of alkali metals which are formed when heated with oxygen are basic in nature. The basic strength of oxides increases in the order of lithium oxide, sodium oxide, potassium oxide, and cesium oxide.

8. Superoxides are colored and \_\_\_\_\_

- a) attractive
- b) magnetic
- c) paramagnetic
- d) diamagnetic

Answer: c

Explanation: All the superoxides of alkali metals are colored and paramagnetic, as they possess three electrons bond where one unpaired electron is present. Few examples of superoxide are potassium superoxide, rubidium superoxide, and cesium superoxide.

9. Lithium chloride is more covalent than potassium chloride.

- a) True
- b) False

Answer: a

Explanation: Lithium chloride is more covalent than Potassium Chloride, due to the smaller size of lithium bigger the anion, larger as its polarizability and the covalent character follow the order of Lithium iodide is greater than Lithium Bromide, greater than lithium chloride, greater than Lithium fluoride.

10. Which of the following is true regarding the reactivity of alkali metals towards a particular halogen? a) Rubidium is greater than that of sodium

- b) Sodium is greater than that of lithium
- c) Lithium is greater than that of rubidium
- d) Rubidium is greater than that of cesium

Answer: a

Explanation: Alkali metals combine readily with halogens to form ionic halides. The reactivity order of alkali metals towards a particular halogen increase in the order; lithium, sodium, potassium, rubidium, and cesium.

11. Lithium and magnesium are \_\_\_\_\_ metals.

- a) sponge
- b) hard
- c) soft

d) smooth Answer: b

Explanation: Lithium and magnesium are harder than other metals in the group because they have a strong metallic bond among themselves. This is one of the similarities between Lithium and magnesium having a diagonal relation.

12. Lithium chloride is \_\_\_\_\_ in nature.

- a) soft
- b) covalent
- c) ionic
- d) complex

Answer: b

Explanation: Both lithium chloride (LiCl) and magnesium chloride (MgCl) are predominantly covalent when compared to other elements in their respective groups, that is alkali metals and alkaline earth metals.

13. What is the difference between the Ionic radius of cations of Lithium and magnesium? a)  $2 \text{ \AA}$

b)  $0.05 \text{ \AA}$

c)  $1 \text{ \AA}$

d)  $5 \text{ \AA}$  Answer: b

Explanation: The Ionic radius of Lithium cation is  $0.60 \text{ \AA}$ , which is very close to that of magnesium cation that is  $0.65 \text{ \AA}$ , therefore the difference between the Ionic radius of cations of Lithium and magnesium is  $0.05 \text{ \AA}$ .

14. What is the electronegativity of lithium?

- a) 2
- b) 1
- c) 5
- d) 4

Answer: b

Explanation: Electronegativity of Lithium is 1.0 and the electronegativity of magnesium as 1.2, they have almost similar electronegativities which is one of the reasons for Lithium and Magnesium's diagonal relationship.

15. Which of the following statements is true regarding the diagonal relationship between Lithium and magnesium?

- a) Lithium and magnesium combined with oxygen to form superoxides
- b) Lithium and magnesium are soft metals
- c) Lithium hydroxide and magnesium Hydroxide are weak bases
- d) Magnesium chloride is completely soluble in water

Answer: c

Explanation: The correct statements of the incorrect ones are that; Lithium and magnesium combine with oxygen in order to form monoxides, they are hard metals and magnesium chloride is partially soluble in water as lithium chloride.

16. Which of the following element has the smallest size in its group?

- a) sodium
- b) rubidium
- c) potassium
- d) lithium

Answer: d

Explanation: The element Lithium whose atomic number is given by 3 is the smallest element in its group that is alkali metals by size. This is one of the reasons why it has anomalous behavior in the periodic table comparatively.

17. Does Lithium react with nitrites?

- a) yes
- b) no

- c) may be
- d) may not be

Answer: a

Explanation: Yes, Lithium which is unlike the other alkali metals, reacts with nitrogen to form the nitride six moles of lithium combine with one mole of a nitrogen atom, in order to form two moles of lithium nitride.

18. On heating lithium carbonate decomposes in order to evolve the \_\_\_\_\_ a) nitrogen

- b) oxygen
- c) carbon dioxide
- d) lithium

Answer: c

Explanation: Lithium carbonate decomposes on heating in order to avoid carbon dioxide whereas other alkali metal carbonates do not evolve carbon dioxide, this occurs because lithium carbonate is unstable in the presence of heat and is the least stable among the carbonates of alkali metals.

19. Lithium has a diagonal relationship with \_\_\_\_\_

- a) magnesium
  - b) sodium
  - c) aluminum
  - d) neon
- Answer: a

Explanation: Lithium shows diagonal resemblance with magnesium which is an element of group 2 and this resemblance is due to the similar polarising power of both these elements. polarizability is proportional to the ionic charge / the square of the Ionic radius.

20. Lithium has the same radius that of magnesium.

- a) true
- b) false

Answer: b

Explanation: The atomic radius of Lithium is  $1.31\text{Å}$  while that of magnesium is  $1.34\text{Å}$ , though Lithium and magnesium do not have the same radius, they have a similar radius which is a reason for their diagonal relationship.

21. Which of the following compound is formed when caustic soda is reacted with ferric chloride?

- a) potassium chloride
- b) sodium chloride only
- c) ferric hydroxide only
- d) both ferric hydroxide and sodium chloride

Answer: d

Explanation: When 1 mole of ferric chloride is reacted with 3 moles of caustic soda, 1 mole of ferric hydroxide which is insoluble and three moles of sodium chloride are formed. It is an example of how caustic soda reacts with salt. 2. Caustic soda and quicklime are together known as

- 
- a) washing soda
  - b) caustic soda
  - c) soda lime
  - d) quicklime

Answer: c

Explanation: A mixture of caustic soda and quicklime is known as soda lime, where caustic soda is nothing but sodium hydroxide and quicklime is calcium oxide. They are represented by the chemical formula  $\text{NaOH}$  and  $\text{CaO}$  respectively.

22. Which of the following is a correct formula for washing soda?

- a)  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$



b)  $\text{Na}_2\text{CO}_3$

c)  $\text{NaCO}_3$

d)  $\text{Na}_2\text{CO}$

[View Answer](#)

Answer: a

Explanation: Washing soda is nothing but sodium carbonate it contains two atoms of sodium, one atom of carbon, three atoms of Oxygen and 10 moles of water in one molecule its chemical formula is given by  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ .

23. Which of the following as a Process to prepare washing soda?

a) Solvay process

b) Amalgam process

c) Boiling

d) Clark's process Answer: a

Explanation: In Solvay process, carbon dioxide gas is passed through brine solution saturated with Ammonia, which results in the formation of sodium bicarbonate, which is filtered and dried it is ignited to give sodium carbonate.

24. Soda Ash is a \_\_\_\_\_ salt.

a) moist

b) anhydrous

c) electrolysis

d) wet Answer: b

Explanation: Sodium carbonate crystallizes from water as decahydrate which effloresces. It on exposure to dry air forms monohydrate which on heating changes to the anhydrous side that is Soda Ash. Therefore, it is an anhydrous salt.

25. Sodium carbonate forms and \_\_\_\_\_ solution.

a) neutral

b) ascetic

- c) acidic
- d) alkaline

Answer: d

Explanation: Sodium carbonate on hydrolysis forms an alkaline solution, when sodium carbonate reacts with water it forms carbonic acid which is a weak acid and sodium hydroxide which is a strong base, therefore forming an alkaline solution.

26. Which of the following is not a use of sodium carbonate?

- a) electronics
- b) laundering
- c) cleaning
- d) textile industry

Answer: a

Explanation: Sodium carbonate or washing soda, which is represented by the chemical formula  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ , is used in water softening, laundering, cleaning, paper, Paints and textile industries, it is not used in electronics.

27. Sodium bicarbonate is also known as \_\_\_\_\_

- a) brine solution
- b) washing soda
- c) baking soda
- d) caustic soda

Answer: c

Explanation: Sodium Bicarbonate is also known as baking soda, sodium carbonate is also known as washing soda, Sodium Hydroxide is also known as caustic soda and 28% of NaCl solution is known as a brine solution.

28. Sodium bicarbonate on heating does not give

- 
- a) nitrogen

- b) water
- c) sodium carbonate
- d) carbon dioxide

Answer: a

Explanation: In the presence of the heat 2 moles of sodium bicarbonate gives 1 mole of sodium carbonate along with one mole of carbon dioxide and one mole of water in an aqueous medium. Sodium bicarbonate is alkaline due to anionic hydrolysis.

29. Is baking soda useful?

- a) yes
- b) no
- c) may be
- d) may not be

Answer: a

Explanation: Yes, baking soda as used as a constituent of baking powder which is a mixture of sodium Bicarbonate, starch and potassium bitartrate or cream of tartar rate and in medicine to remove the acidity of the stomach, a mild antiseptic for skin infections and also in the fire extinguisher.

30. Sodium chloride has a \_\_\_\_\_ nature.

- a) alkaline
- b) deliquescent
- c) acidic
- d) basic

Answer: b

Explanation: Delinquency is a tendency to dissolve. Sodium chloride is obtained by evaporation of seawater but due to the presence of impurities like calcium chloride and magnesium chloride, it has deliquescent nature.

31. Pure NaCl is gets precipitated due to the \_\_\_\_\_

- a) common electron effect
  - b) common Ion effect
  - c) common cation effect
  - d) common Proton effect
- Answer: b

Explanation: The sodium chloride that's obtained by seawater evaporation, is purified by passing through HCl gas through the impure saturated solution of NaCl and due to common Ion effect, pure NaCl gets precipitated 28% of NaCl solution is called Brine.

32. Which of the following is a method of preparation of sodium hydroxide?
- a) syngas reaction
  - b) causticizing process
  - c) purification
  - d) water gas reaction

Answer: b

Explanation: A 10 percent solution of sodium carbonate is treated with milk of lime, this is known as causticizing process and is one of the methods of preparation of sodium hydroxide, sodium carbonate reacts with calcium hydroxide to form calcium carbonate as precipitate and sodium hydroxide.

33. What happens when sodium amalgam is treated with water?

- a) Sodium sulfate is formed
- b) Sodium carbonate is formed
- c) Sodium Hydroxide is formed
- d) Sodium bicarbonate is formed

Answer: c

Explanation: In the electrolytic process, which involves Nelson cell and castner kellner cell, the sodium amalgam is treated with water to give sodium hydroxide, hydrogen gas,

and mercury. Sodium amalgam is formed when sodium metal discharges at the mercury cathode combining with mercury.

34. Sodium Hydroxide is not soluble in water.

- a) true
- b) false

Answer: b

Explanation: The physical properties of sodium hydroxide are that it is white translucent solid, readily soluble and water as the crystals of sodium hydroxide a deliquescent in nature. It is also known as caustic soda.

35. Which of the following is not an alkaline earth metal?

- a) beryllium
- b) boron
- c) aluminium
- d) calcium

Answer: a

Explanation: Beryllium, belongs to the 2<sup>nd</sup> group. It is not called as an alkaline earth metal because the first element of this group that is beryllium is different from the rest of the members and it also shows a diagonal relationship with aluminium.

36. How many electrons do group 2 elements have in their S orbital of the valence shell? a) 1

- b) 2
- c) 3
- d) 4

Answer: b

Explanation: The alkaline earth metals have two electrons in the s-orbital of their valence shell and their general electronic configuration as represented as  $ns^2$ . Similar to the alkali metals these elements compounds are predominantly ionic.

37. Which of the following order is correct with respect to the hydration enthalpy?

- a)  $B > Mg > Ca < Sr > Ba$
- b)  $Be^{+2} > Mg^{+2} > Ca^{+2} > Sr^{+2} > Ba^{+2}$
- c)  $B > Mg < Ca > Sr > Ba$
- d)  $B > Mg > Ca > Sr < Ba$

Answer: b

Explanation: The hydration enthalpy decreases with the increase in ionic size along with the group towards down, the correct order of hydration enthalpy is given as  $Be^{+2} > Mg^{+2} > Ca^{+2} > Sr^{+2} > Ba^{+2}$  and the hydration enthalpies of alkaline earth metal ions are greater than the size of alkali metal ions. We can say that these are extensively hydrated than them.

38. What is the colour of barium?

- a) brick red
- b) crimson
- c) apple green
- d) blue

Answer: c

Explanation: The colours of Barium, Strontium and Calcium are Apple Green, Crimson and brick red. These are the colours of their flames, the colours occur when an electron is excited and jumps into a higher energy level and then drop back. They emit the radiation in the form of visible light.

39. Powdered beryllium burns in order to give \_\_\_\_\_

- a) barium sulphate
- b) beryllium chloride
- c) beryllium nitride
- d) beryllium hydride

Answer: c

Explanation: We know that beryllium is kinetically inert to Oxygen and water as it forms oxide film on the surface. But whereas powdered beryllium burns brightly on ignition in the air in order to give the oxides and nitrides of beryllium.

40. Which of the following is the best route to prepare  $\text{BeF}_2$ ?

- a) thermal decomposition of  $\text{BeF}_2$
- b) thermal decomposition of beryllium
- c) thermal decomposition of  $(\text{NH}_4)_2\text{BeF}_4$
- d) thermal decomposition of Barium sulphate

Answer: c

Explanation: All the alkali Earth metals combine with halogen at elevated temperatures forming their halides, the thermal decomposition of  $(\text{NH}_4)_2\text{BeF}_4$ , is best road and to prepare  $\text{BeF}_2$  and  $\text{BeCl}_2$  is conveniently made from the oxide.

41. Can beryllium hydride be prepared by combining with hydrogen through Heating?

- a) Yes
- b) No
- c) Maybe
- d) May not be

Answer: b

Explanation: All the alkaline earth metals (except beryllium) their hydrides can be prepared by combining with hydrogen. We can prepare beryllium hydride, through heating beryllium chloride with lithium aluminium hydride.

42. The reduction potential of alkaline earth metals is \_\_\_\_\_ alkali metals.

- a) may be equal to
- b) greater than
- c) less than
- d) equal to

Answer: c

Explanation: Although the alkaline earth metals are reductants in nature, their reducing potential is not as greater as alkali metals. Beryllium has a negative value when compared to the other elements in its group, this is due to the large hydration energy associated with the small size of beryllium.

43. Which of the following is a component of milk of magnesia?

- a) magnesium oxide
- b) magnesium sulphate
- c) magnesium hydroxide
- d) magnesium chloride

Answer: c

Explanation: Suspension of magnesium Hydroxide in water is known as milk of magnesia and it is used as an antacid in order to treat acidity. It works as a strong base while magnesium carbonate is an ingredient and toothpaste.

44. With which of the following elements magnesium does not form an alloy? a) manganese

- b) aluminium
- c) zinc
- d) barium

Answer: d

Explanation: Magnesium combines with few elements like aluminium, manganese, zinc and tin in order to form a lot of magnesium aluminium alloys which are very light in mass and are used in the construction of aircraft. There are also many other uses of magnesium.

45. Which of the following element is different from the other group 2 elements? a) magnesium

- b) beryllium
- c) calcium



d) strontium

Answer: b

Explanation: Beryllium, differs from the rest of the members of its group due to the following reasons: beryllium has a small atomic and ionic size, it has no vacant d-orbitals and it has a higher charge density comparatively.

46. Beryllium has \_\_\_\_\_ melting point and is \_\_\_\_\_ than the other members of its family. a)

low, smoother

b) low, harder

c) higher, harder

d) higher, smoother

Answer: c

Explanation: The points of difference are that the beryllium is denser and harder than other members of its family and it has a higher melting point that is 1551 Kelvin while that of magnesium is just 924 Kelvin. So we can say that beryllium has a higher melting point and is harder than other members of its family.

47. Does beryllium react with water?

a) Yes

b) No

c) Maybe

d) Cannot say

Answer: b

Explanation: Beryllium does not react with water even at a higher temperature while the other members of the family liberate hydrogen by reacting with water at room temperature, this is also one of the reasons of the anomalous behaviour of beryllium.

48. Beryllium Hydroxide is \_\_\_\_\_ in nature.

- a) acidic
- b) basic
- c) amphoteric
- d) cannot say

Answer: c

Explanation: Beryllium oxide (BeO) and beryllium hydroxide [Be(OH)<sub>2</sub>] are amphoteric in character they also dissolve in acid to form a salt and beryllate in alkali. Beryllate is any salt containing an anion BeO<sub>2</sub><sup>2-</sup>.

49. Beryllium forms beryllium carbide on heating.

- a) true
- b) false

Answer: a

Explanation: Beryllium when heated with carbon forms beryllium carbide which on reaction with water gives methane, while the other members of the group form ionic carbide which is acetylide which on reaction with water evolves acetylene.

50. Beryllium and Aluminium are \_\_\_\_\_ in nature.

- a) electropositive
  - b) electronegative
  - c) metallic
  - d) fluorescent
- Answer: b

Explanation: Beryllium's and aluminium action with water is the same, they do not decompose with water or in the presence of water even at hundred degrees centigrade. This is probably due to their less electropositive character that is they are electronegative in nature.

51. Which of the following is a correct formula for sodium meta aluminate?

- a) Na<sub>2</sub>AlO<sub>4</sub>
- b) Na<sub>2</sub>Al<sub>2</sub>O

c)  $\text{Na}_2\text{Al}_2\text{O}_4$

d)  $\text{NaAl}_2\text{O}_4$

Answer: c

Explanation: When aluminium reacts with alkali, that is when one mole of aluminium reacts with two moles of sodium hydroxide in presence of two moles of water two moles of sodium meta aluminate is formed along with three moles of hydrogen. The chemical formula for sodium meta aluminate is  $\text{Na}_2\text{Al}_2\text{O}_4$ .

52. Aluminium and beryllium are \_\_\_\_\_ in nature.

a) metallic

b) active

c) passive

d) electropositive

Answer: c

Explanation: Aluminium and beryllium are rendered passive on reaction with concentrated nitric acid, due to the formation of the oxide layer on their surfaces, this is one of the similarities between aluminium and beryllium.

53. Does beryllium form complexes?

a) Yes

b) No

c) Maybe

d) Cannot say

Answer: a

Explanation: Beryllium and aluminium form a number of complexes both form fluoro complex and ions, this is one of the similar chemical properties between beryllium and aluminium as they share a diagonal relationship.

54. Which of the following Statements do you think is true?

a) aluminium and beryllium are not stable in air

- b) beryllium and aluminium share a diagonal relationship
- c) the ionisation potential of beryllium is lower compared with its group
- d) beryllium has a greater oxidation potential

Answer: b

Explanation: The correct statement is a beryllium and aluminium share a diagonal relationship, as aluminium and beryllium are stable in air, the ionization potential of beryllium has higher comparatively with its group and it has a lower oxidation potential.

55. Which of the following acid chemical formula first slaked lime?

- a) Calcium chloride
- b) Calcium oxide
- c) Calcium hydroxide
- d) Calcium carbonate

Answer: c

Explanation: When 1 mole of burnt lime, that is calcium oxide is combined with 1 mole of the hydrogen molecule, a hissing sound appears and slaked lime is produced along with the heat. The chemical formula for slaked lime  $\text{Ca}(\text{OH})_2$ .

56. Quicklime as same as calcium oxide.

- a) True
- b) False

Answer: a

Explanation: Yes, calcium oxide chemical formula is  $\text{CaO}$  and it is also called as quicklime or simply lime. It is prepared by the thermal decomposition of calcium carbonate at 1072-1270 Kelvin, carbon dioxide comes as a byproduct and it is a basic oxide.

57. Which of the following is not a compound of mortar?

- a) Phenol
  - b) Quicklime
  - c) Sand
  - d) Water
- Answer: a

Explanation: Quicklime or calcium oxide ( $\text{CaO}$ ) is used as a basic flux, for removing the hardness of water, also used in mortar. A mixture of quick lime and sand in the ratio 1:3 with enough water to make a thick paste is called mortar.

58. What is the enthalpy of heat for dissolving quicklime and water?

- a) 55 kJ/mol
- b) 63 kJ/mol
- c) 75 kJ/mol
- d) 78 kJ/mol

Answer: b

Explanation: Calcium hydroxide is prepared by dissolving quicklime and water and the enthalpy change for this reaction is 63 kJ/mole (the sign is negative). Here the chemical formulae for quicklime and Calcium hydroxide are  $\text{CaO}$  and  $\text{Ca}(\text{OH})_2$  respectively.

59. Which of the following compound is formed when slaked lime is treated with excess dioxide in the presence of water?

- a) Barium sulphate
- b) Calcium carbonate
- c) Calcium hydroxide
- d) Calcium bicarbonate

Answer: d

Explanation: When 1 mole of Calcium Hydroxide is treated with an excess of carbon dioxide in the presence of water, it

results in the formation of calcium bicarbonate which is soluble. It is one of the most important properties of slaked lime.

60. Limestone is insoluble in water.

- a) True
- b) False

Answer: a

Explanation: Calcium carbonate is also known as limestone or marble are chalk, its chemical formula is given by  $\text{CaCO}_3$ . It is insoluble in water but dissolves in the presence of carbon dioxide due to the formation of calcium bicarbonate.

61. Can limestone be prepared through slaked lime?

- a) Yes
- b) No
- c) Maybe
- d) Cannot say

Answer: a

Explanation: Yes, limestone can be prepared through slaked lime. Limestone is calcium carbonate while slaked lime is calcium hydroxide. When limestone is passed through carbon dioxide, it results in the formation of calcium carbonate which is a precipitate and water.

62. Which of the following do you think is the correct formula for gypsum?

- 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)  $\text{CaSO}_4$

Answer: a

Explanation: Gypsum is a compound of calcium. It is chemically calcium sulphate dehydrate and it is also known as alabaster. It is added to cement to slow down at speed of setting. It's really very essential in our day to day life.

63. Gypsum is the same as plaster of Paris.

- a) True
- b) False

Answer: b

Explanation: Plaster of Paris is calcium sulphate hemihydrate and gypsum is calcium sulphate dihydrate. On heating gypsum at 390 Kelvin, it gives plaster of Paris. The chemical formula of gypsum and plaster of Paris is  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  and  $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$  respectively.

64. What is dead burnt plaster?

- a) Hexahydrate calcium sulphate
- b) Hemihydrate calcium sulphate
- c) Anhydrous calcium sulphate
- d) Decahydrate calcium sulphate

Answer: c

Explanation: When plaster of Paris or calcium sulphate hemihydrate, which is given by the chemical formula  $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$  is heated about 393 Kelvin, no water of crystallization is left and anhydrous calcium sulphate is formed, it is known as dead burnt plaster.

65. Is the plaster of Paris useful in setting a solid mass?

- a) Yes
- b) No
- c) Maybe
- d) Cannot say

Answer: a

Explanation: When plaster of Paris or calcium sulphate hemihydrate which is given by the chemical formula  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$  is mixed with water, it forms of plastic mass which sets into a solid mass with slight expansion due to dehydration and its reverse conversion into gypsum.

66. What is chloride of lime?

- a) Calcium sulphate
- b) Calcium chloro hypochlorite
- c) Calcium chloride
- d) Calcium hydroxide

Answer: b

Explanation: Chloride of lime is chemically known as calcium chloro hypochlorite and it is given by the chemical formula  $\text{CaOCl}_2$ , it is also known as bleaching powder. Bleaching powder is prepared by the fusion of calcium hydroxide and chlorine.

67. What is the average percentage of available chlorine theoretically?

- a) 85
- b) 49
- c) 58
- d) 66

Answer: b

Explanation: With an excess of dilute sulfuric acid and carbon dioxide, calcium chloro hypochlorite forms chlorine, which is known as available chlorine. The average percentage of available chlorine is 35 to 40% but theoretically, it should be 49%, which diminishes on keeping the Powder due to a chemical change.

68. Which of the following is not a use of calcium chloro hypochlorite?



- a) Sterilization of water
- b) Manufacture of chloroform
- c) Germicide
- d) Painting

Answer: d

Explanation: Calcium chloro hypochlorite or chloride of lime or bleaching powder which is chemically  $\text{CaOCl}_2$  is used for bleaching, as a disinfectant and germicide in the sterilization of water, for making wool which is unshrinkable and in the manufacture of chloroform.

69. In the average composition of portland cement, the percentage of magnesium oxide is a \_\_\_\_\_ a) 3 to 4%
- b) 2 to 3%
  - c) 4 to 5%
  - d) 1 to 2%

Answer: b

Explanation: Cement is an important building material. The average composition of portland cement is calcium oxide of 50 to 60%, Silicon dioxide of 20 to 25%, aluminium oxide of 5 to 10%, magnesium oxide of 2 to 3%, ferric oxide of 1 to 2% and sulphur trioxide of 1 to 2%.