

9th Science Lesson 14 Questions in English

14] Acids, Bases And Salts

1. Which are the chemical substances used in everyday life?

- a) Acid
- b) Salt
- c) Base
- d) All the above**

Explanation

Soil, air, water, all the life forms and the materials that they use are all consist of chemicals. Out of such chemicals, acids, bases and salts are mostly used in everyday life.

2. Which of this acid is secreted in human stomach?

- a) Nitric Acid
- b) Sulphuric Acid
- c) Hydrochloric Acid**
- d) Chloric Acid

Explanation

Our body metabolism is carried out by means of hydrochloric acid secreted in our stomach.

3. Assertion (A): Acids forms hydrogen ions in the aqueous solution.

Reasoning (R): Base compounds forms hydroxyl ions in the aqueous solution.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

An acid is a the compound which is capable of forming hydrogen ions (H^+) in aqueous solution whereas a base is a compound that forms hydroxyl ions (OH^-) in solution.

4. Which of this chemical element is neutral?

- a) Acid
- b) Base
- c) Salt**
- d) All the above

Explanation

When an acid and a base react with each other a neutral product is formed which is called salt.

5. What is the taste of an acid?

- a) Bitter
- b) Sour**
- c) Tasteless
- d) None of the above

Explanation

A certain type of chemical compounds present in them gives sour taste. These are called acids. Substances with sour taste are called acids.

6. What is the root word of Acid?

- a) Acidus**
- b) Acidi
- c) Aidus
- d) Aicidi

Explanation

The word 'acid' is derived from the Latin name "acidus".

7. Match

- | | |
|------------|-------------------|
| A. Tea | i) Oxalic acid |
| B. Vinegar | ii) Tannic acid |
| C. Orange | iii) Acetic acid |
| D. Tomato | iv) Ascorbic acid |

- a) ii, iv, iii, i
- b) i, iv, iii, ii
- c) ii, iii, iv, i**
- d) i, ii, iv, iii

Explanation

Table 14.1 Acid and its source

Source	Acid Present
Apple	Malic acid
Lemon	Citric acid
Grape	Tartaric acid
Tomato	Oxalic acid
Vinegar	Acetic acid
Curd	Lactic acid
Orange	Ascorbic acid
Tea	Tannic acid
Stomach juice	Hydrochloric acid
Stings of Ant, Bee	Formic acid

8. When Svante Arrhenius proposed a theory on acids and base?

- a) 1889
- b) 1725
- c) 1761
- d) 1884**

Explanation

In 1884 a Swedish chemist Svante Arrhenius proposed a theory on acids and bases.

9. Arrhenius theory produces ____ or ____ ions in aqueous solution.

- a) H^+ , HO
- b) H^- , H_2
- c) H^+ , H_3O^+**
- d) H^- , H_2O

Explanation

According to Arrhenius theory an acid is a substance which furnishes H^+ ions or H_3O^+ ions in aqueous solution.

10. Which ion is separated from HCl molecule in the presence of water?

- a) He^{2+}
- b) Cl
- c) H^+**
- d) N_2

Explanation

Hydrogen ions in HCl are produced in the presence of water. The separation of H^+ ion from HCl molecules cannot occur in the absence of water.

11. Which of these statements are not true?

- a) Hydrogen ions exist in combined state with water.
- b) Hydrogen ions can also exist alone.**
- c) Hydrogen ions is always H^+ or H_3O^+ .
- d) All the above

Explanation

Hydrogen ions cannot exist alone but they exist in combined state with water molecules. Thus hydrogen ions must always be H^+ (or) Hydronium (H_3O^+).

12. Assertion (A): The Hydrogen containing substances are classified as acids.

Reasoning (R): All the acids contain one or more hydrogen.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.

- c) A is True but R is False.
d) Both A and R is False.

Explanation

All acids essentially contain one or more hydrogen. But all the hydrogen containing substances are not acids. For example, methane (CH₄) and ammonia (NH₃) also contain hydrogen. But they do not produce H⁺ ions in aqueous solution.

13. Which of these acids has three replaceable hydrogen ions?

- a) Acetic acid
b) **Phosphoric acid**
c) Formic acid
d) Nitric acid

Explanation

Table 14.2 Ions formed by acids

Acid	Molecular Formula	Ions formed		No. of replaceable hydrogen
Acetic Acid	CH ₃ COOH	H ⁺	CH ₃ COO ⁻	1
Formic Acid	HCOOH	H ⁺	HCOO ⁻	1
Nitric Acid	HNO ₃	H ⁺	NO ₃ ⁻	1
Sulphuric Acid	H ₂ SO ₄	2H ⁺	SO ₄ ²⁻	2
Phosphoric Acid	H ₃ PO ₄	3H ⁺	PO ₄ ³⁻	3

14. Choose the correct statements.

- i) Organic acids are present in plants and living things.
ii) Hydrochloric acid is an example of organic acid.

- a) **i only**
b) ii only
c) Both i and ii
d) Neither i nor ii

Explanation

Based on their sources: Organic Acids: Acids present in plants and animals (living things) are organic acids. Example: HCOOH, CH₃COOH

15. Which of these is the source of the Inorganic acid?

- a) Plants

- b) Sea water
- c) Animals
- d) Minerals**

Explanation

Inorganic Acids: Acids prepared from rocks and minerals are inorganic acids or mineral acids.
Example: HCl, HNO₃, H₂SO₄

16. State the example of a monobasic acid?

- a) H₃PO₄
- b) H₂SO₄
- c) HNO₃**
- d) CH₃COOH

Explanation

Monobasic Acid: Acid that contains only one replaceable hydrogen atom per molecule is called monobasic acid. It gives one hydrogen ion per molecule of the acid in solution. Example: HCl, HNO₃

17. Choose the correct statements.

- i) Basicity refers the number of replaceable hydrogen atoms in one molecule of an acid.
- ii) The total number of hydrogen atoms in the molecular formula classifies the basicity.
- iii) CH₃COOH is a tribasic acid.

- a) i only**
- b) ii only
- c) iii only
- d) All the above

Explanation

For acids, we use the term basicity that refers to the number of replaceable hydrogen atoms present in one molecule of an acid. For example, acetic acid (CH₃COOH) has four hydrogen atoms but only one can be replaced. Hence it is monobasic.

18. Assertion (A): Acid which gives two hydrogen ions per molecule of acid are called dibasic acid.
Reasoning (R): H₃PO₄ is an example for the dibasic acid.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

Dibasic Acid: An acid which gives two hydrogen ions per molecule of the acid in solution. Example: H₂SO₄, H₂CO₃

Tribasic Acid: An acid which gives three hydrogen ions per molecule of the acid in solution.
Example: H₃PO₄

19. Choose the correct statements.

- i) Acids do not get ionized in water completely.
 - ii) A strong acid completely ionize in water.
 - iii) Weak acids do not ionize in water.
- a) i only
 - b) ii only**
 - c) iii only
 - d) All the above

Explanation

Acids get ionized in water (produce H^+ ions) completely or partially. Based on the extent of ionization acids are classified as below.

Strong Acids: These are acids that ionize completely in water. Example: HCl

Weak Acids: These are acids that ionize partially in water. Example: CH_3COOH .

20. Which of these causes the ionization?

- a) Heat
- b) Electrical discharge
- c) Chemical reactions
- d) All the above**

Explanation

Ionization is the condition of being dissociated into ions by heat or radiation or chemical reactions or electrical discharge.

21. How many types of acids are classified based on the concentration?

- a) 3
- b) 2**
- c) 4
- d) 5

Explanation

Concentrated Acid: It has relatively large amount of acid dissolved in a solvent. Dilute Acid: It has relatively smaller amount of acid dissolved in solvent.

22. Which of these are the properties of acids?

- a) Turns red litmus to red.
- b) Acid aqueous solutions conduct electricity**
- c) Bitter taste
- d) Only source of acids are minerals.

Explanation

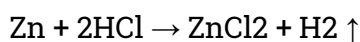
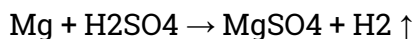
Properties of Acids: They have sour taste. Their aqueous solutions conduct electricity since they contain ions. Acids turn blue litmus red.

23. Which of these will react with acids and give hydrogen gas?

- a) Salts
- b) Water
- c) Metals**
- d) Base

Explanation

Acids react with active metals to give hydrogen gas.

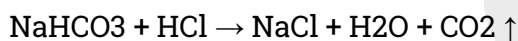
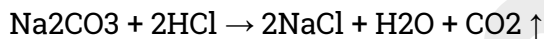


24. Which gas is resulted in the reaction of acids with metal carbonates?

- a) Carbon dioxide**
- b) Methane
- c) Oxygen
- d) Nitrogen

Explanation

Acids react with metal carbonate and metal hydrogen carbonate to give carbon dioxide.



25. Which of these is not involved in a neutralization reaction?

- a) Metallic oxides
- b) Salt
- c) Base
- d) Gas**

Explanation

Acids react with metallic oxides to give salt and water. $\text{CaO} + \text{H}_2\text{SO}_4 \rightarrow \text{CaSO}_4 + \text{H}_2\text{O}$

Acids react with bases to give salt and water. $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

The reaction is known as neutralization reaction.

26. What are the end products of a neutralization reaction?

- a) Gas, Salt
- b) Salt, water**
- c) Water, Base
- d) Base, Salt

Explanation

Acids react with bases to give salt and water. The reaction is known as neutralization reaction

27. Which acid is called as the King of chemicals?

- a) Nitric acid
- b) Hydrochloric acid
- c) Sulphuric acid**
- d) Phosphoric acid

Explanation

Sulphuric acid is called King of Chemicals because it is used in the preparation of many other compounds. It is used in car batteries also.

28. Which of this acid is used as a food preservative?

- a) Hydrochloric acid
- b) Citric acid**
- c) Formic acid
- d) Lactic acid

Explanation

Hydrochloric acid is used as a cleansing agent in toilets. Citric acid is used in the preparation of effervescent salts and as a food preservative.

29. Which of these are manufactured by Nitric Acid?

- a) Fertilizers
- b) Paints
- c) Drugs
- d) All the above**

Explanation

Nitric acid is used in the manufacture of fertilizers, dyes, paints and drugs.

30. Which of these is not a usage of Oxalic acid?

- a) Cleansing agent in toilets**
- b) Bleach for wood
- c) Remove black stains
- d) Clean iron and manganese deposits

Explanation

Oxalic acid is used to clean iron and manganese deposits from quartz crystals. It is also used as bleach for wood and removing black stains.

31. Which of this acid is used in aerated drinks?

- a) Oxalic acid
- b) Carbonic acid**
- c) Nitric acid

d) Hydrochloric acid

Explanation

Carbonic acid is used in aerated drinks. Tartaric acid is a constituent of baking powder.

32. Choose the correct statements.

- i) Acids ionize in water which determines its properties.
- ii) Acids partially ionize in organic solvents.
- iii) HCl is dissolved in ethanol and produce H^+ and Cl^- ions.

a) i only

b) ii only

c) iii only

d) None of the above

Explanation

Acids show their properties only when dissolved in water. In water, they ionize to form H^+ ions which determine the properties of acids. They do not ionize in organic solvents. For example when HCl is dissolved in water it produces H^+ ions and Cl^- ions whereas in organic solvents like ethanol they do not ionize and remain as molecule.

33. Assertion (A): Aquaregia is a mixture of HCl and HNO_3 .

Reasoning (R): Gold and silver react with HCl and HNO_3 .

- a) Both A and R is True and R is the correct explanation of A.
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

Metals like gold and silver are not reactive with either HCl or HNO_3 . But the mixture of these two acids can dissolve gold. This mixture is called Aquaregia.

34. State the properties of Aquaregia.

- i) HCl and HNO_3 mixture of molar ratio 3:1
- ii) A yellow-orange fuming liquid.
- iii) Highly corrosive can dissolve gold.

a) i only

b) ii only

c) iii only

d) All the above

Explanation

Aquaregia is a mixture of hydrochloric acid and nitric acid prepared optimally in a molar ratio of 3:1. It is a yellow-orange fuming liquid. It is a highly corrosive liquid, able to attack gold and other substances.

35. What is the boiling point of the Aquaregia?

- a) 108°C
- b) 226°C
- c) - 42°C
- d) 231K

Explanation

Aquaregia

Chemical formula: $3 \text{HCl} + \text{HNO}_3$

Solubility in Water: Miscible in water

Melting point: - 42°C (- 44°F, 231K)

Boiling point: 108°C (226°F, 381K)

36. Which language is the origin for the word Aquaregia?

- a) Rome
- b) Latin
- c) French
- d) Persian

Explanation

The term Aquaregia is a Latin phrase meaning 'King's Water'. The name reflects the ability of aquaregia to dissolve the noble metals such as gold, platinum and palladium.

37. What are the uses of aquaregia?

- a) Dissolve gold and platinum
- b) Cleaning gold
- c) Refining gold
- d) All the above

Explanation

Uses of Aquaregia

1. It is used chiefly to dissolve metals such as gold and platinum.
2. It is used for cleaning and refining gold.

38. According to Arrhenius theory Bases,

- i) Ionize in water to form hydroxyl ions.
 - ii) React with acids and result in salt and water.
- a) i only
 - b) ii only
 - c) Both i and ii
 - d) Neither i nor ii

Explanation

According to Arrhenius theory bases are substances that ionize in water to form hydroxyl ions (OH^-). There are some metal oxides which give salt and water on reaction with acids. These are also called bases.

39. What is the name of water soluble base substances soluble?

a) Alkalis

b) Salts

c) Carbonates

d) Metals

Explanation

Bases that are soluble in water are called alkalis. A base reacts with an acid to give salt and water only. $\text{Base} + \text{Acid} \rightarrow \text{Salt} + \text{Water}$

40. Which of these is not an alkali?

a) Copper Hydroxide

b) Sodium Hydroxide

c) Potassium Hydroxide

d) Calcium Hydroxide

Explanation

Sodium hydroxide ionizes in water to give hydroxyl ions and thus get dissolved in water. So it is an alkali. $\text{NaOH} (\text{aq}) \rightarrow \text{Na}^+ (\text{aq}) + \text{OH}^- (\text{aq})$

41. Assertion (A): All the bases are alkalis.

Reasoning (R): All alkalis are not bases.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

All alkalis are bases but not all bases are alkalis. For example: NaOH and KOH are alkalis whereas $\text{Al}(\text{OH})_3$ and $\text{Zn}(\text{OH})_2$ are bases.

42. How many number of hydroxyl ions are present in Calcium hydroxide?

a) 1

b) 2

c) 4

d) 3

Explanation

Table 14.3 Ions formed by bases in water.

Base	Molecular Formula	Ions formed		No. of replaceable hydroxyl ion
Calcium oxide	CaO	Ca ²⁺	O ²⁻	1
Sodium oxide	Na ₂ O	Na ⁺	O ²⁻	1
Potassium hydroxide	KOH	K ⁺	OH ⁻	1
Calcium hydroxide	Ca(OH) ₂	Ca ²⁺	OH ⁻	2
Aluminium hydroxide	Al(OH) ₃	Al ³⁺	OH ⁻	3

43. Identify the incorrect match.

- A. Diacidic Base i) Magnesium Hydroxide
 B. Monoacidic Base ii) Zinc Hydroxide
 C. Triacidic Base iii) Aluminum Hydroxide
- a) i only
 b) ii only
 c) iii only
 d) None of the above

Explanation

Classification of Bases: Based on their Acidity

Monoacidic Base: It is a base that ionizes in water to give one hydroxide ion per molecule. Example: NaOH, KOH

Diacidic Base: It is a base that ionizes in water to give two hydroxide ions per molecule. Example: Ca(OH)₂, Mg(OH)₂

Triacidic Base: It is a base that ionizes in water to give three hydroxide ions per molecule. Example: Al(OH)₃, Fe(OH)₃

44. Which of the following is correct based on the concentration of alkalis.

- a) **Concentrated Alkali has high percentage of alkali in its aqueous solution.**
 b) Dilute Alkali is an aqueous solution.
 c) Concentrated alkali exists as solid form of substances.
 d) Dilute Alkali has low percentage of aqueous solution.

Explanation

Based on concentration

Concentrated Alkali: It is an alkali having a relatively high percentage of alkali in its aqueous solution. **Dilute Alkali:** It is an alkali having a relatively low percentage of alkali in its aqueous solution.

45. Choose the Incorrect statements.

- i) Strong Bases ionize completely in the aqueous solution.
 ii) Sodium Hydroxide is classified as weak base.

- a) i only
- b) ii only**
- c) Both i and ii
- d) Neither i nor ii

Explanation**Based on Ionization**

Strong Bases: These are bases which ionize completely in aqueous solution. Example: NaOH, KOH

Weak Bases: These are bases that ionize partially in aqueous solution. Example: NH_4OH , $\text{Ca}(\text{OH})_2$

46. Acidity of a base means the number of replaceable _____ in _____ of a base.

- a) Hydrogen, ten molecules
- b) Nitrogen, one molecule
- c) Hydroxyl, one molecule**
- d) Oxygen, 100 molecules

Explanation

The term acidity is used for base which means the number of replaceable hydroxyl groups present in one molecule of a base.

47. Choose the correct statements regarding the properties of a base.

- i) Red litmus is turned to blue.
 - ii) Bitter taste
 - iii) Aqueous solution is soapy
- a) i only
 - b) ii only
 - c) iii only
 - d) All the above**

Explanation

Properties of Bases

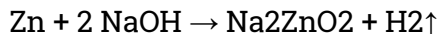
- a) They have bitter taste.
- b) Their aqueous solutions have soapy touch.
- c) They turn red litmus blue.
- d) Their aqueous solutions conduct electricity.

48. What is the resultant gas of Base reacting with metal?

- a) Nitrogen
- b) Oxygen
- c) Hydrogen**
- d) Ammonia

Explanation

Bases react with metals to form salt with the liberation of hydrogen gas.



49. What is the nature of non-metallic oxides?

- a) Acidic
- b) Base
- c) Neutral
- d) All the above

Explanation

Bases react with non-metallic oxides to produce salt and water. Since this is similar to the reaction between a base and an acid we can conclude that nonmetallic oxides are acidic in nature. $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$

50. Define a neutralization reaction.

- a) Salt + Acid ----> Base
- b) Acid + Base ----> Salt + water
- c) Base + Acid ----> Salt
- d) Salt + Base ----> Water

Explanation

Bases react with acids to form salt and water. $\text{KOH} + \text{HCl} \rightarrow \text{KCl} + \text{H}_2\text{O}$

The above reaction between a base and an acid is known as Neutralization reaction.

51. Which of these results in ammonium gas while heating with ammonium salts?

- a) Base
- b) Acid
- c) Metal
- d) All the above

Explanation

On heating with ammonium salts, bases give ammonia gas. $\text{NaOH} + \text{NH}_4\text{Cl} \rightarrow \text{NaCl} + \text{H}_2\text{O} + \text{NH}_3\uparrow$

52. Which of these metals does not react with sodium hydroxide?

- a) Copper
- b) Chromium
- c) Silver
- d) All the above

Explanation

Few metals do not react with sodium hydroxide. Example: Cu, Ag, Cr

53. Match

- | | |
|-----------------------|------------------|
| A. Sodium Hydroxide | i) Medicine |
| B. Ammonium Hydroxide | ii) White washes |

- C. Calcium Hydroxide iii) Soap making
D. Magnesium Hydroxide iv) Cloth stain remover

- a) iv, ii, iii, i
b) iii, iv, ii, i
c) ii, iii, i, iv
d) iii, i, ii, iv

Explanation

Uses of Bases

- (i) Sodium hydroxide is used in the manufacture of soap.
(ii) Calcium hydroxide is used in white washing of building.
(iii) Magnesium hydroxide is used as a medicine for stomach disorder.
(iv) Ammonium hydroxide is used to remove grease stains from cloths.

54. Choose the correct statements.

- i) An acid turns blue litmus paper into red.
ii) Phenolphthalein is colorless in acid medium.
a) i only
b) ii only
c) Both i and ii
d) Neither i nor ii

Explanation

Test with a litmus paper: An acid turns blue litmus paper into red. A base turns red litmus paper into blue. Test with an indicator Phenolphthalein: In acid medium, phenolphthalein is colorless. In basic medium, phenolphthalein is pink in color.

55. In which of the medium the Methyl orange is pink color?

- a) Acid**
b) Base
c) Neutral
d) All the above

Explanation

Test with an indicator Methyl orange: In acid medium, methyl orange is pink in color. In basic medium, methyl orange is yellow in color.

56. Match the color indicator of base.

- A. Methyl Orange i) Pink
B. Phenolphthalein ii) Blue
C. Litmus iii) Yellow

- a) ii, i, iii
b) i, iii, ii

c) iii, i, ii

d) ii, iii, i

Explanation

Table 14.4 Acid base indicator

Indicator	Colour in acid	Colour in base
Litmus	Blue to Red	Red to Blue
Phenolphthalein	Colourless	Pink
Methyl orange	Pink	Yellow

57. What does a pH scale measures?

a) Hydrogen ion concentration

b) Neutrality

c) Acidity

d) None of the above

Explanation

A scale for measuring hydrogen ion concentration in a solution is called pH scale.

58. What does p denote in a pH scale?

a) Potenz

b) Product

c) Pole

d) Partial

Explanation

The 'p' in pH stands for 'potenz' in German meaning power.

59. What is the maximum scale of a pH scale?

a) 8

b) 7

c) 14

d) 10

Explanation

The pH scale is a set of numbers from 0 to 14 which is used to indicate whether a solution is acidic, basic or neutral.

60. What is the pH value of a neutral solution?

a) < 7

b) =7

c) > 7

d) 0

Explanation

Acids have pH less than 7, Bases have pH greater than 7 and a neutral solution has pH equal to 7.

61. Which of this salt is separated from the sea water?

- a) Potassium Chloride
- b) Sodium Carbonate
- c) Sodium Chloride**
- d) Calcium Hydroxide

Explanation

When you say salt you may think of the common salt. Sea water contains many salts dissolved in it. Sodium chloride is separated from these salts.

62. Salts are,

- i) It is a product of acid base reaction.
- ii) It produces only positive ions in water.

- a) i only**
- b) ii only
- c) Both i and ii
- d) Neither i nor ii

Explanation

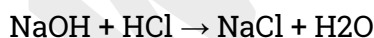
Salts are the products of the reaction between acids and bases. Salts produce positive ions and negative ions when dissolved in water.

63. Which of this reaction produce a normal salt?

- a) Neutralization**
- b) Double replacement
- c) Ionization
- d) Combustion

Explanation

Normal Salts: A normal salt is obtained by complete neutralization of an acid by a base.



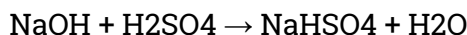
64. Assertion (A): Acid salt is obtained by adding calculated amount of base to a polybasic acid.

Reasoning (R): Metals partially replace hydrogen ions of an acid.

- a) Both A and R is True and R is the correct explanation of A.**
- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

Acid Salts: It is derived from the partial replacement of hydrogen ions of an acid by a metal. When a calculated amount of a base is added to a polybasic acid, acid salt is obtained.



65. Which of these ions are partially replaced to form a Basic salt?

- a) Nitrogen
- b) Hydroxide**
- c) Hydrogen
- d) Chlorine

Explanation

Basic Salts: Basic salts are formed by the partial replacement of hydroxide ions of a diacidic or triacidic base with an acid radical. $\text{Pb}(\text{OH})_2 + \text{HCl} \rightarrow \text{Pb}(\text{OH})\text{Cl} + \text{H}_2\text{O}$

66. Which of these are the characteristics of a Double salt?

- a) Combination of saturated solution of two salts.
- b) Salts are in equimolar ratio
- c) Crystallization
- d) All the above**

Explanation

Double Salts: Double salts are formed by the combination of the saturated solution of two simple salts in equimolar ratio followed by crystallization. For example, potash alum is a mixture of potassium sulphate and aluminum sulphate. $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$

67. Choose the correct statements.

- i) Salts are mostly liquids which boil at high temperature.
 - ii) All Salts are soluble in water.
 - iii) Salts are hygroscopic in nature.
- a) i only
 - b) ii only
 - c) iii only**
 - d) All the above

Explanation

Properties of Salts: Salts are mostly solids which melt as well as boil at high temperature. Most of the salts are soluble in water. For example, chloride salts of potassium and sodium are soluble in water. But silver chloride is insoluble in water. They are odorless, mostly white, cubic crystals or crystalline powder with salty taste. Salt is hygroscopic in nature.

68. Assertion (A): Salts having water of crystallization are hydrated salts.

Reasoning (R): Water molecules of salts are known as water of crystallization.

- a) Both A and R is True and R is the correct explanation of A.**

- b) Both A and R is True but R is not the correct explanation of A.
- c) A is True but R is False.
- d) Both A and R is False.

Explanation

Many salts are found as crystals with water molecules. These water molecules are known as water of crystallization. Salts that contain water of crystallization are called hydrated salts.

69. Choose the correct statements.

- i) The water molecules hydrated to a salt is indicated after a dot in the chemical formula.
 - ii) Copper sulphate pentahydrate has five water molecules only.
- a) i only
 - b) ii only
 - c) Both i and ii**
 - d) Neither i nor ii

Explanation

The number of molecules of water hydrated to a salt is indicated after a dot in its chemical formula. For example, copper sulphate crystal has five molecules of water for each molecule of copper sulphate. It is written as $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ and named as copper sulphate pentahydrate. This water of crystallization makes the copper sulphate blue. When it is heated, it loses its water molecules and becomes white.

70. What are the qualities of an anhydrous salt?

- a) Not soluble in water
- b) Highly concentrated carbon atoms
- c) Does not contain water of crystallization**
- d) Not soluble in any liquids

Explanation

Salts that do not contain water of crystallization are called anhydrous salt. They are generally found as powders.

71. Which of these studies are made by physically examining a salt?

- a) Color
- b) Smell
- c) Density
- d) All the above**

Explanation

The physical examination of the unknown salt involves the study of color, smell and density. This test is not much reliable.

72. What is the end product of salts reacting with concentrated Hydrochloric acid?

- a) Chlorides
- b) Carbonates
- c) Nitrates
- d) Sulphate

Explanation

Flame Test: Certain salts on reacting with concentrated hydrochloric acid (HCl) form their chlorides. The paste of the mixture with con. HCl is introduced into the flame with the help of platinum wire.

73. Match the color of flame and the inferred compounds.

- A. K⁺ i) Green Fleshes
- B. Na⁺ ii) Brick red
- C. Ca²⁺ iii) Pink violet
- D. Zn²⁺ iv) Golden yellow

- a) i, iv, ii, iii
- b) i, iii, ii, iv
- c) ii, iii, i, iv
- d) **iii, iv, ii, i**

Explanation

Colour of the flame	Inference
Brick red	Ca ²⁺
Golden Yellow	Na ⁺
Pink Violet	K ⁺
Green Fleshes	Zn ²⁺

74. What gas is resulted if HCl is added with a carbonate salt?

- a) **CO₂**
- b) O₂
- c) Cl₂
- d) H₂

Explanation

When HCl is added with a carbonate salt it gives off CO₂ gas with brisk effervescence.

75. Which of these is known as common salt?

- a) Sodium Bicarbonate
- b) Sodium Carbonate
- c) **Sodium Chloride**
- d) Sodium Hydroxide

Explanation

Common Salt (Sodium Chloride - NaCl) It is used in our daily food and used as a preservative.

76. What are the uses of Sodium Carbonate?

- a) Glass Industries
- b) Soap Making
- c) Paper Industries
- d) All the above**

Explanation

Washing Soda (Sodium Carbonate- Na_2CO_3) is used in softening hard water. It is used in glass, soap and paper industries.

77. Choose the Incorrect statements regarding Sodium bicarbonate.

- i) NaHCO_3 is the formula for the Sodium bicarbonate also known as Baking soda.
 - ii) Baking powder consists of baking soda and Oxalic acid.
 - iii) It is also used in soda-acid fire extinguishers.
- a) i only
 - b) ii only**
 - c) iii only
 - d) None of the above

Explanation

Baking Soda (Sodium bicarbonate - NaHCO_3): It is used in making of baking powder which is a mixture of baking soda and tartaric acid. It is used in soda-acid fire extinguishers. Baking powder is used to make cakes and bread, soft and spongy. It neutralizes excess acid in the stomach and provides relief.

78. What is the chemical name for the bleaching powder?

- a) Calcium Oxychloride**
- b) Formaldehyde
- c) Hydrogen Peroxide
- d) Sodium Hypo chloride

Explanation

Bleaching powder (Calcium Oxychloride - CaOCl_2): It is used as disinfectant. It is used in textile industry for bleaching cotton and linen.

79. What is the chemical formula for the Plaster of Paris?

- a) K_2SO_4
- b) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$
- c) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$**
- d) $\text{MgSO}_3 \cdot \text{H}_2\text{O}$

Explanation

Plaster of Paris (Calcium Sulphate Hemihydrate - $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$)

- i. It is used for plastering bones.
- ii. It is used for making casts for statues.

80. Which of the following is a double salt?

- a) Potash Alum
- b) Copper Sulphate
- c) Sodium bicarbonate
- d) Potassium Chloride

Explanation

Potash alum is a chemical compound widely used as the potassium sulfate dodecahydrate. It is double salt that is used commonly in medicine and the water treatment process.