10th Std – Chemistry

9. Solutions

I. Choose the correct answer:

1. Choose the correct statement with regard to a solution.

(i) A solution contains a solute and a solvent which is heterogeneous

(ii) A solution may contain two or more substances which is homogeneous

(iii) A true solution is one in which two phases are present

(iv) A homogeneous mixture of dispersed phase and dispersion medium is known as a true solution

2. Which of the following is a true solution?

(i) Milk (ii) Salt in carbon di sulphide

(iii) Blood **(iv) Sugar solution**

3. Choose a wrong statement?

(i) The particles of a true solution are not visible even under a powerful ultra microscope

(ii) The particles of a colloidal solution are visible under ultra microscope

(iii) The particles of a true solution show Tyndall effect

(iv) the particles of a colloidal solution show Tyndall effect

4. A given solute has a maximum solubility of 36.5 g in 100g of water. Solution A contains 10g of the solute in 100g of water. Solute B contains 35g in 100g of water. Choose the correct statement.

(i) Both are unsaturated solutions

(ii) Both are saturated solutions

(iii) Solution A is saturated while solution B is unsaturated

(iv) Solution A is unsaturated while solution B is saturated

5. The solubility of sodium chloride in water in 36g at 25^0C. This means that .....

(i) 100 g of water can dissolve and 36g of sodium chloride to form an saturated solution at 25^oC

(ii) 100 g of water can dissolve only 36g of sodium chloride whatever be the temperature

(iii) only less than 36g sodium chloride can be dissolved in 100g of water at a given temperature

(iv) A solution containing 36g of sodium chloride in 100g of water is a super saturated solution

6. Which of the following is a saturated solution?

1. Nitrogen

2. Soda water

3. Given the solubility of sodium chloride in water in 36g at 25^{o}C , solution containing 36g of sodium chloride in 100g of water.

(i) 1,2 and 3 (ii) 1 and 2

(iii) 1 and (iv) 2 and 3

7. The solubility of copper sulphate in water is 20.7g at 20^{o}C.

(a) Solution A contains 18g of copper sulphate in 100g of water.

(b) Solution B contains 20.7g of copper sulphate in 100g of water.

(c) Solution C contains 10.35g of copper sulphate in 50g of water.

Which of the following is/ are saturated solutions?

(i)Solution (a) only **(ii)Solution (b) only (c)**

(iii)Solution (a) only (c) (iv)Solution (c) only

8. The solubility of sodium nitrate at 25^{o}C is 92g. To a saturated solution of sodium nitrate , 5g of sodium nitrate is added. Which of the following will happen of the temperature is raised to 40^{o}C?

(i) The solution becomes an unsaturated solution

(ii) The additional sodium nitrate added remains as such

(iii) The solubility of sodium nitrate decreases an increasing temperature

(iv) There is no change in the solubility of sodium nitrate at 40^{o}C

9. Carbon dioxide gas is filled in soft drinks at high pressures. As a result, ...

(i) the solubility of carbon dioxide decrease

(ii) the solubility of carbon dioxide increase

(iii) the increased pressure does not have any effect on the solubility of carbon dioxide gas

(iv) the soft drink because sweety to taste

10. Hydrogen chloride (HCl) and water (H_2O) are polar compounds. Carbon tetrachloride (CCl_4) is a non polar compound . Hydrogen chloride .....

(i) is soluble both in water and carbon tetra chloride

(ii) is insoluble both in water and carbon tetrachloride

(iii) is soluble in water only

(iv) is soluble in carbon tetrachloride only

11. The solubility of a solute A in a given solvent increases with the increase in Temperature. This means that .....

(i) When the solute is added to the solvent, the heat is absorbed during dissolution

(ii) When the solute is added to the solvent, the heat is liberated during dissolution

(iii) No heat is liberated or absorbed during dissolution

(iv) The solute may be a exothermic compound

12. Choose the incorrect statement from the following:

(i) Colloidal solution consists of two phases in which the dispersed phase is dispersed in a dispersion medium

(ii) Tyndall effect is shown by a solution in which the size of the particle is greater than that present in a true solution and less than that present in a suspension

(iii) Brownian motion is observed in a colloidal solution

(iv) The colloidal particles do not diffuse in a solution

13. The mass of a gas dissolved in a fixed volume of a liquid is directly proportional to the pressure of the gas. This statement is Known as .....

(i) Boyles law (ii) Raoult's law

(iii) Henry's law (iv) gay Lussac law

14. 10g of sodium chloride is dissolved in 50g of water. The concentration of the solution in terms of weight percent is .....

(i) 16.6 % (ii) 50%

(iii) 1.66% (iv) 25%

15. Which of the following is a true solution?

(i) a solution of sugar and water

(ii) a solution of ethanol and sugar

(iii) a mixture of mud water

(iv) milk

16. Colloidal solutions are made up of two phases viz dispersed phase and dispersion medium. In milk, the dispersed phase and dispersion medium are .....

(i) solids **(ii) liquids**

(iii) gases (iv) solid and liquid repellent

17. A heterogeneous mixture in which the dispersion does not occur at all is known as .....

(i) true solution **(ii) suspension**

(iii) colloid (iv) aqueous solution

18. The solubility of copper sulphate in water is 20.7g at 20^{o}C. A solution of copper sulphate containing 10g of copper sulphate in 100g of water is known as .....

(i) saturated **(ii) unsaturated**

(iii) super saturated (iv) semi saturated

19. the solubility of sodium nitrate in 92g at 25^{o}C. The solubility may be increased by .....

(i) increasing temperature (ii) decreasing temperature

(iii) adding more sodium nitrate (iv) adding more water

20. A solution 'A' contains 10g of sugar in water. Another solution 'B' contains 20g of sugar in water. Solution B is more ..... than A.

(i) diluted **(ii) concentrated**

(iii) saturated (iv) unsaturated

21. In alloys, the solute is a ..... .

(i) solid (ii) liquid

(iii) gas (iv) water

22. The solvent in smoke is ..... .

(i) solid **(ii) gas**

(iii) liquid (iv) nitrogen

23. An example of a solution in which liquid is the solute and solid as solvent in ..... .

(i) smoke (ii) milk

(iii) cloud **(iv) cheese**

24. Brownian movement is observed in ..... .

(i) sugar solution **(ii) milk**

(iii) bronze (iv) He-O_2 mixture

25. When sand or clay is added to water, the resulting solution is ..... .

(i) true solution (ii) colloidal solution

(iii) suspension (iv) non aqueous solution

26. When sunlight passes through the window of the class room, the dust particles scatter the light making the path of the light visible. This phenomenon is called ..... .

(i) tyndall effect (ii) Brownian motion

(iii) electro phoresis (iv) electro plating

27. In an exothermic process, increase of temperature ..... the solubility

(i) increases **(ii) decreases**

(iii) remains constant (iv) neither decreases nor increases

28. The solution which contains alcohol as the solvent is called ..... .

(i) aqueous solution **(ii) non aqueous solution**

(iii) alloys (iv) suspension

29. The solubility of sodium nitrate in water is ..... .

(i) 92g **(ii) 184g**

(iii) 95g (iv) 36g

30. A ..... is a homogenous mixture of two or more substances.

(i) true solution (ii) colloidal solution

(iii) suspension (iv) mixture of milk powder and water

31. Solute+ .....→ solution.

(i) suspension (ii) colloid

(iii) solvent (iv) salt

32. ..... + Dispersion medium → colloidal solution.

(i) sugar salt **(ii) dispersed phase**

(iii) suspension (iv) true solution

33. In cloud, the solute and solvent are ..... .

(i) gas and liquid **(ii) liquid and gas**

(iii) solid and gas (iv) gas and solid

34. ..... is opaque in nature.

(i) Water (ii) True solution

(iii) Colloids **(iv) Suspension**

35. The size of particles in true solution is .....

(i) 10 Å to 1000 Å **(ii) 1 Å to 10 Å**

(iii) more than 1000 Å (iv) less than 1000 Å

10. Atoms and Molecules

I. Choose the correct answer:

1. 100 ml of oxygen gas and 100 ml of nitrogen gas at normal temperature and pressure contain .....

(i) equal number of atoms

(ii)) equal number of molecules

(iii) oxygen gas has more number of atoms than nitrogen gas

(iv) nitrogen gas has more number of atoms than oxygen gas

2. Identify the monatomic and diatomic species from the following pairs .....

(i) helium and neon (ii) hydrogen and chlorine

(iii) chlorine and ozone **(iv) helium and oxygen**

3. The atomic mass of ozone is 16 and its molecular mass is 48. It atomicity is .....

(i) $\frac{16}{48}$ **(ii)** $\mathbf{\frac{48}{16}}$

(iii) 48 x 16 (iv) 48+16

4. The molecular mass of chlorine is 71 and its atomic mass is 35.5. The atomicity of chlorine is .....

(i) 1 **(ii) 2**

(iii) 3 (iv) cannot be predicted

5. the atomic mass of sulphur is 32. It has atomicity 8. The molecular mass of sulphur is .....

(i) 32 **(ii) 256**

(iii) 4 (iv) 42

6. The atomic and mass numbers of certain elements are given as:

1. Cl $^{35}_{17}$; Ar $^{40}_{18}$ 2. Cl $^{35}_{17}$; Cl $^{35}_{17}$ 3. O $^{8}_{16}$; O $^{8}_{17}$ 4. Ar $^{40}_{18}$; Ca $^{40}_{20}$

these pairs , the pair which is known as isotopes are .....

(i)1 and 2 **(ii) 2**

(iii) 2 and 4 (iv) 3 and 4

7. Isobars are .....

(i) atoms of the same element with same atomic number but different mass number

(ii) atoms of different elements having the same mass number but different atomic number

(iii) atoms of different elements with the same number of neutrons

(iv) atoms of different elements having the same atomic number and different mass number

8. $_6C^{14}$ and $_7N^{14}$ are examples of .....

(i) isotopes **(ii) isobars**

(iii) isotones (iv) isosters

9. Which of the following statement truly reflect the definition of atom and molecule?

(i) atoms are unstable and do not exist free whereas molecules exist free

(ii) atoms of polyatomic molecules do not exist free whereas molecules exist free

(iii) atoms of all types of molecules and molecules exist free

(iv) monoatomic elementary molecule and molecules do not exist free

10. Which of the following have independent existence?

(i) an atom of nitrogen (ii) an atom of helium

(iii) a molecule of chloride **(iv) both (ii) and (iii)**

11. Which of the following pairs constitute an elementary molecule?

(i) hydrogen and chlorine (ii) water and nitric oxide

(iii) methane and water (iv) Hydrogen and water

12. Identify the pair which consists of a homoatomic molecule and a hetero atomic molecule .....

1. nitrogen and ammonia 2. nitrogen and oxygen

3. oxygen and water 4. chlorine and nitrogen

(i) 1 and 2 **(ii) 1 and 3**

(iii) 3 and 4 (iv) 1 and 4

13. The number of atoms present in one gram of hydrogen atom is .....

(i) 1 **(ii) 6.023×10^{23}**

(iii) $2 \times 6.023 \times 10^{23}$ (iv) 3.06×10^{23}

14. Which of the following is correct with respect to a mole of substance?

(i) 1 mole = 6.023×10^{23} molecules

(ii) 1 mole = atomicity x 6.023×10^{23} atoms

(iii) 1 mole = atomicity x 1 gram atom

(iv) all the above

15. The number of molecules in 32 g of oxygen is .....

(i) 3.01 x 10^{23} **(ii) 6.023 x 10^{23}**

(iii) 3.01 x 10^{32} (iv) 2 x 6.023 x 10^{23}

16. The mass of one molecule of nitrogen is .....

(i) 28 g (ii) 0.28 g

(iii) $\frac{\mathbf{28}}{\mathbf{6.023 \times 1023}}$ **g** (iv) $\frac{6.023 \times 1023}{28}$ g

17. Which of the following has highest mass in grams?

(i) 1 atom of silver (ii) 1 mol of nitrogen

(iii) 1 mol of calcium (iv) 2 g of sodium

18. One mol of carbon-dioxide contains .....

(i) 6.023 x 10^{23} molecules of carbon-dioxide

(ii) 6.023 x 10^{23} atoms of oxygen

(iii) 18.1 x 10^{23} molecules of carbon-dioxide

(iv) 3 gm of carbon-dioxide

19. Which among the following will contain the same number of atoms of oxygen and other element in one mole of that substance .....

1. carbon monoxide 2. nitrous oxide

3. nitrogen dioxide 4. carbon-dioxide

(i) 1 and 2 (ii) 3 and 4

(iii) 1 and 3 (iv) 2 and 4

20. The volume occupied by 2 mol of nitrogen dioxide at STP is .....

(i) 22.41 **(ii) 44.821**

(iii) 2.2421 (iv) 4.4821

21. 1 cc of N_2O at STP contains .....

(i) $\frac{1.8}{224}$ x 10^{22} atoms **(ii)** $\frac{\mathbf{6.023}}{\mathbf{22400}}$ **x 10^{23} molecules**

(iii) $\frac{1.32}{224}$ x 10^{23} electrons (iv) all the above

22. One mole of the oxygen gas has the volume of .....

(i) 1 L of oxygen a STP

(ii) 32 L of oxygen a STP

(iii) 22.4 L of oxygen a STP

(iv) 6.02 x 10^{23} molecules of oxygen at any temperature and pressure

23. How many moles are represented by 36g of water?

(i) 1 **(ii) 2**

(iii) 3 (iv) 4

24. What is the mass of 4.48 x $10^{-2}m^3$ of Methane gas at STP?

(i) 16 g **(ii) 32 g**

(iii) 48 g (iv) 54 g

25. Gram molecular mass of nitrogen is .....

(i) 23 (ii) 14

(iii) 7 (iv) none

26. The number of molecules present in 17 g of ammonia is .....

(i) 6.023 x 10^{23} (ii) 6.023

(iii) 60.23 x 10^{23} (iv) 6.023 x 10^{22}

27. The gram-atomic mass of chlorine is .....

(i) 35.5 g (ii) 35.5 kg

(iii) 3.55 g (iv) 3.55 kg

28. 4.25 g of ammonia is equal to .....

(i) 0.25 mole (ii) 1 mole

(iii) 1.5 mole (iv) 0.5 mole

29. How many molecules are present in one gram of hydrogen?

(i) 6.023 x 10^{22} (ii) 6.023 x 10^{23}

(iii) 3.015 x 10^{23} (iv) 3.015 x 10^{-12}

30. The weight of one calcium atom (at mass=40) is .....

(i) 40 g (ii) 6.02 x 10^{-23}g

(iii) 6.64 x 10^{-23}g (iv) 6.02 x 10^{23}g

31. Which of the following will contain the mass number of atoms as 20g of calcium?

(i) 24 g of Mg (ii) 12 g of C

(iii) 24 g of C **(iv) 12 g of Mg**

32. Avogadro number of helium atoms weigh .....

(i) 1.00 g **(ii) 4.00 g**

(iii) 8.00 g (iv) 4 x 6.023 x 10^{23}g

33. The mass of 2.24 dm^3 of a gas under standard condition is 2.8 g. Its molar mass is .....

(i) 28 (ii) 14

(iii) 42 (iv) 56

34. The vapour density of a gas is 11.2. The volume occupied by 11.2 dm^3 of the gas at STP is .....

(i) 1 dm^3 **(ii) 11.2 dm^3**

(iii) 22.4 dm^3 (iv) 10 dm^3

35. The molecular weight of NO_2 is 46. Its density in gdm^3 will be .....

(i) $\frac{46}{22.4}$ (ii) $\frac{46}{22400}$

(iii) 46 x 22.4 (iv) 46 x $\frac{22400}{760}$

36. which of the following contain the same number of moles

(i) 49 g of H_2SO_4 (ii) 100 g of $CaBr_2$

(iii) 75 g of NaI **(iv) all**

37. The volume of STP of hydrogen produced by 12g Mg (at. Wt. 24) .....

(i) 2.24 x $10^{-2}m^3$ **(ii) 1.12 x $10^{-2}m^3$**

(iii) 44.8 dm^3 (iv) 6.1 dm^3

38. The number of molecules present in 14 gms of nitrogen at STP is .....

(i) 6.023 x 10^{23} (ii) 6.023 x 10^{-23}

(iii) 3.0115×10^{23} (iv) 3.0115×10^{-23}

39. Atoms of the same elements having similar chemical properties and different physical properties are known as .....

(i) isotopes (ii) isobars

(iii) isotone (iv) isochors

40. The species that take part in chemical reactions are .....

(i) atoms (ii) molecules

(iii) electrons (iv) protons

41. The ratio of atoms in a molecule of H_2SO_4 is .....

(i) 2:1:4 (ii) 2:2:4

(iii) 1:1:1 (iv) 2:2:3

42. ..... is the name given to a process where atoms of one element is changed to atoms of another element.

(i) disintegration **(ii) transmutation**

(iii) atomisation (iv) combination

43. Tri atomic molecules contain ..... number of atoms.

(i) three (ii) four

(iii) two (iv) six

44. The molecular mass of an atom is 32 and its atomic mass 8. Its atomicity is .....

(i) 4 (ii) 8

(iii) 2 (iv) 3

45. The atomicity of a molecule is 3. Its atomic mass is 16. Its molecular mass is .....

(i) 48 (ii) 16

(iii) 32 (iv) 18

11. Chemical Reaction

I. Choose the correct answer:

1. A lustrous white silver plate , is exposed to the atmosphere for several days. Which of the following statement is incorrect?

(i) The silver plate gets tarnished

(ii) A black coating is formed due to the formation of silver sulphide

(iii) The silver plate is unaffected

(iv) The shape of the silver plate is altered

2. To an aqueous solution of lead nitrate , in a beaker, an aqueous solution of potassium iodide is added. Choose the correct statements .....

1. a yellow precipitate of lead iodide is formed
2. this is an example of double decomposition reaction
3. the resultant mixture is a colourless solution
4. this is an displacement reaction

(i) 1 and 2 (ii) 3 and 4

(iii) 1 and 3 (iv) 2 and 3

3. To a pinch of powdered calcium carbonate in a test tube, a few drops of dilute hydrochloric acid is added which of the following statement is correct .....

1. chlorine gas is liberated
2. calcium carbonate and hydrochloric acid are the reactants
3. calcium chloride carbondioxide and H_2O are the products
4. no change is observed

(i) 1 and 2 (ii) 3 and 4

(iii) 1 and 3 **(iv) 2 and 3**

4. Which of the following is a decomposition reaction?

(i) heating ammonium-di-chromate at high temperature,

(ii) mixing copper sulphate solution and barium chloride solution,

(iii) placing zinc rod into a solution of copper sulphate

(iv) adding water to quick lime

5. Choose the combination reaction .....

(i) extraction of a metal

(ii) burning of metals

(iii) addition of a more active metal to a solution of less active metal compound

(iv) electrolysis

6. Identify the double decomposition reaction .....

(i) hydrogen burns in air

(ii) electrolysis of water

(iii) digestion of food in our body

(iv) addition of dilute sulphuric acid to barium chloride solution

7. $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe_2$. This reaction is an example of .....

(i) combination reaction (ii) double displacement reaction

(iii) decomposition reaction **(iv) displacement reaction**

8. Which of the following is redox reaction?

(i) ZnO + C → Zn + CO

(ii) $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$

(iii) $FeCl_3 + 3NH_4OH \rightarrow Fe(OH)_3 + 3NH_4Cl$

(iv) $2Ag\,Br \xrightarrow{light} 2Ag + Br_2$

9. Choose the exothermic reaction from the following .....

(i) a detergent is dissolved in water

(ii) glucose is kept on our tongue

(iii) ammonium chloride is dissolved in water

(iv) all the above

10. In a redox reaction .....

(i) an oxidising agent gets reduced

(ii) a reducing agent gets oxidised

(iii) both oxidation and reduction occur together

(iv) all the above

11. For the reaction taking place in solution, A→B, the rate of reaction is expressed as .....

(i) $\frac{d[A]}{dt}$ **(ii)** $\frac{-d[A]}{dt}$

(iii) $\frac{-d[B]}{dt}$ (iv) $\frac{-d[A]}{d[B]}$

12. During a chemical reaction which takes place in solution, ...

(i) the concentration of the reactant increases

(ii) the concentration of the product decreases

(iii) the concentration of the reactant does not change

(iv) the concentration of the reactant decreases

13. Choose the correct statement .....

(i) magnesium ribbon reacts faster in hydrochloric acid

(ii) magnesium ribbon reacts faster in acetic acid

(iii) magnesium ribbon reacts slower in hydrochloric and faster in acetic acid

(iv) hydrogen gas is involved at the same rate when magnesium ribbon is allowed to react separately with hydrochloric acid and acetic acid

14. In which of the following , the rate of reaction is faster?

(i) dissolution of calcium carbonate in hydrochloric acid at room temperature

(ii) dissolution of calcium carbonate in hydrochloric acid at 40^{o}C

(iii) dissolution of calcium carbonate in dilute hydrochloric acid at 40^{o}C

(iv) all the above

15. Choose a pair of monobasic acids .....

(i) HCl and HNO_3 (ii) $H_2SO_4 + H_2CO_3$

(iii) H_3PO_4 and H_2SO_4 (iv) $CH_3COOH+H_2SO_4$

16. Consider acetic acid and hydrochloric acid. Choose the correct statement.

(i) both acetic and hydrochloric acids are strong acids

(ii) both acetic and hydrochloric acids are weak acids

(iii) acetic acid is a stronger acid than hydrochloric acid

(iv) hydrochloric acid is a stronger acid than acetic acid

17. The basicity of sulphuric acid and phosphoric acids are .....

(i) 1 and 2 **(ii) 2 and 3**

(iii) 1 and 3 (iv) 2 and 4

18. You have two solutions of hydrochloric acid solution A contains 36.5 g of hydrochloric acid is one litre of the solution. Solution B contains 3.65g hydrochloric acid is one litre of the solution. Among solution A and B .....

(i) A is a stronger acid than B (ii) B is a stronger acid than A

(iii) Both are equally strong (iv) A is a weaker acid than B

19. Select a mineral acid among the following .....

(i) acetic acid (ii) citric acid

(iii) hydrochloric acid (iv) lactic acid

20. Which of the following react with hydrochloric acid but not with sodium hydroxide?

(i) calcium oxide, ammonium hydroxide

(ii) sodium oxide, carbon-di-oxide

(iii) sodium oxide, ammonium hydroxide

(iv) Sodium oxide, magnesium hydroxide

21. Which of the following reactions is not feasible/

(i) Passing carbon-di-oxide gas through an aqueous solution of sodium carbonate

(ii) Adding a piece of aluminium metal in an aqueous solution of sodium hydroxide

(iii) Adding sulphuric acid to powdered copper carbonate

(iv) Adding sodium hydroxide to a calcium oxide

22. Which of the following solution has pH=3?

(i) An aqueous solution of HCl pf 10^{-3} M

(ii) An aqueous solution of NaOH of 10^{-3} M

(iii) An aqueous solution of NaOH whose hydroxyl ion concentration is 10^{-9} M

(iv) Pure water

23. Lemon juice has pH 2. Tomato juice has pH 4. Toothpaste has a pH 9. Choose the correct statement

(i) Toothpaste is acidic , while both lemon juice and tomato juice are alkaline

(ii) Toothpaste and lemon juice are alkaline while tomato juice is acidic

(iii) Toothpaste is alkaline while both tomato and lemon juice are acidic

(iv) all are acidic

24. A solution turns red litmus blue. Its pH would be .....

(i) 2 (ii) 4

(iii) 7 **(iv) 9**

25. Which of the following is a characteristic of an acid salt?

(i) Acid salts dissolve in water giving H^+ ions

(ii) Acid salts are formed by adding calculated amount of a base to a poly basic acis

(iii) Acid salts are formed by the partial replacement of hydrogen ions ions ina polybasic acid

(iv) All the above

26. The formation of calcium hydroxide from calcium oxide and water is an example of ..... reaction

(i) combination (ii) double decomposition

(iii) decomposition (iv) displacement

27. the reaction between an aqueous solution of lead nitrate and dilute hydrochloride in ..... reaction.

(i) double decomposition (ii) combination

(iii) precipitation (iv) oxidation

28. The reaction between aqueous solution of sodium sulphate and barium chloride is ..... reaction.

(i) precipitation (ii) redox

(iii) simple displacement (iv) decomposition

29. The decomposition of potassium chlorate is faster in the presence of manganese dioxide. Manganese dioxide acts as a .....

(i) reactant **(ii) catalyst**

(iii) oxidising agent (iv) reducing agent

30. ..... react faster in dilute hydrochloric acid.

(i) powder calcium carbonate (ii) Marble

(iii) Iron rod (iv) Crystalline sodium chloride

31. A red litmus paper is dipped in moist chlorine . Its colour .....

(i) changes to blue **(ii) remain red**

(iii) changes to green (iv) changes to orange

32. A neutral solution will have pH .....

(i) 7 (ii) less than 7

(iii) between 6-7 (iv) between 7-8

33. Among distilled water and 1 M NaOH, the one having the maximum pH is .....

(i) distilled water **(ii) 1 M NaOH**

(iii) 0.1 M HCl (iv) 0.1 m NaOH

34. An example of triacidic base is .....

(i) $Fe(OH)_2$ (ii) $Fe(OH)_3$

(iii) NaOH (iv) $Ca(OH)_2$

35. The gases evolved on heating lead nitrate are .....

(i) O_2 and NO **(ii) O_2 and NO_2**

(iii) O_2 and N_2 (iv) N_2 and NO_2

36. The gas obtained when crystals of ammonium dichromate is heated in .....

(i) chromium trioxide (ii) metallic chromium

(iii) ammonium chromate (iv) chromic acid

37. An example of a reaction which is simple displacement reaction is .....

(i) $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$ (ii) $Na_2SO_4 + BaCl_2 \rightarrow 2NaCl + BaSO_4$

(iii) $CuSO_4 + H_2S \rightarrow CuS + H_2SO_4$ (iv) $2Mg + O_2 \rightarrow 2MgO$

38. ..... will react with dilute hydrochloric acid faster than marble chips.

(i) Powdered calcium carbonate (ii) sodium metal

(iii) iron rod (iv) magnesium ribbon

39. Magnesium ribbon reacts slower in ..... than in hydrochloric acid.

(i) sulphuric acid (ii) nitric acid

(iii) acetic acid (iv) water

40. An example of an organic acid is .....

(i) formic acid (ii) hydrochloric acid

(iii) sulphuric acid (iv) nitric acid

41. The number of hydrogen ions per molecule in a tribasic acid is .....

(i) 1 (ii) 2

(iii) 3 (iv) 4

42. The constituent present in baking powder is .....

(i) sodium benzoate (ii) acetic acid

(iii) sodium lactate **(iv) tartaric acid**

43. Which of the following is not an alkali?

(i) NaOH (ii) KOH

(iii) $Al(OH)_3$ (iv) C_5OH

44. The pOH of a solution containing $[OH^-]$ concentration 10^{-3} M is .....

(i) 3 (ii) 2

(iii) 11 (iv) 14

45. A solution containing sodium hydroxide has a concentration 1.0×10^{-9} M. The pH of the solution is .....

(i) 9 **(ii) 5**

(iii) 4 (iv) 8

46. The acid which has an approximate pH range 2.2 to 2.4 is .....

(i) tomato juice (ii) coffee

(iii) lemon juice (iv) lemon saliva

47. The ideal pH value of the blood is .....

(i) 0.5 (ii) 5.5

(iii) 4.5 **(iv) 7.4**

48. Cu(OH)Cl is an example of .....

(i) acidic salt **(ii) basic salt**

(iii) neutral salt (iv) double salt

49. An aqueous solution which turns blue litmus red and methyl orange pink is .....

(i) NaOH (ii) KOH

(iii) Ca $(OH)_2$ **(iv) HCl**

50. An aqueous of magnesium oxide is .....

(i) acidic **(ii) alkaline**

(iii) neutral (iv) negative

51. Reduction involves addition of .....

(i) protons **(ii) electrons**

(iii) atoms (iv) molecular

52. Combustion reaction are ..... reactions.

(i) endothermic **(ii) exothermic**

(iii) combination (iv) reduction

53. $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$. In this chemical reaction, MnO_2 acts as .....

(i) reactant (ii) product

(iii) catalyst (iv) promoter

54. On heating the green colour copper carbonate changes into ..... colour resulting the formation of copper oxide.

(i) white **(ii) black**

(iii) green (iv) red

55. If the value of pOH of a substance is 3, its pH is .....

(i) 3 **(ii) 11**

(iii) 14 (iv) 1

56. The acid used in the preparation of fertilizers is .....

(i) HCl (ii) H_2SO_4

(iii) HNO_3 (iv)H_3PO_4

57. An example for strong acid is .....

(i) hydrochloric acid (ii) acetic acid

(iii) malic acid (iv) citric acid

58. The acid used in the preparation of cool drinks is .....

(i) sulphuric acid **(ii) carbonic acid**

(iii) tartaric acid (iv) hydrochloric acid

59. The alkali that is used as medicine for stomach troubles is .....

(i) sodium hydroxide (ii) calcium hydroxide

(iii) magnesium hydroxide (iv) carbon hydroxide

60. ..... is used to grease stains from clothes.

(i) Potassium hydroxide (ii) Aluminium hydroxide

(iii) Ammonium hydroxide (iv) Silver hydroxide

61. In a particular chemical reaction, two electrons are gained that is known as a/an .....

(i) oxidation **(ii) reduction**

(iii) decomposition (iv) displacement

62. If heat is evolved in a particular chemical reaction, it is said to be an .....

(i) endothermic **(ii) exothermic**

(iii) oxidation (iv) decomposition

63. When glucose is kept in our tongue, a chilling effect is felt, this is an example for .....

(i) endothermic (ii) exothermic

(iii) combustion (iv) oxidation

64. Acid present in gape is .....

(i) malic acid **(ii) tartaric acid**

(iii) oxalic acid (iv) citraic acid

65. An example for tribasic acid is .....

(i) CH_3COOH **(ii) H_3PO_4**

(iii) H_2So_4 (iv) H_2CO_3

66. For human blood the pH range is ..... to .....

(i) 4.5- 6 (ii) 6.5-7.5

(iii) 7.35 – 7.45 (iv) 4.4 – 5.5

67. Metal + Acid → Salt + ...

(i) Oxygen (ii) Water

(iii) Carbon **(iv) Hydrogen**

12. Periodic Classification of Elements

I.Choose the correct answer

1. A plot of square rod of frequency of X-rays emitted by a metal against atomic number gives .....

(i) a straight line (ii) a curve

(iii) a straight line parallel to X axis (iv) a straight line parallel to Y axis

2. The basis for periodic classification of the elements as suggested by Mosley is .....

(i) atomic weight (ii) valency

(iii) atomic number (iv) physical and chemical properties

3. In the long form of periodic table.

1. Elements have been arranged in increasing order of atomic weight.

2. Elements have been arranged in increasing order of atomic number.

3. There are seven periods and 18 groups

4. There are eight periods and 19 groups

(i) 1,2,3 **(ii) 2 and 3**

(iii) 1, 3 (iv) 3 and 4

4. The third period consists of elements presents having atomic number.

(i) 1,2 (ii) 8

(iii) 11 to 18 (iv) 19 to 36

5. The maximum number of elements present in third period is .....

(i) 2 **(ii) 8**

(iii) 18 (iv) 36

6. The fourth period of the long form of periodic table.

(i) contain eight elements

(ii) contains 8 normal elements, 10 transition elements and 14 inner transition elements

(iii) contains elements from rubidium to xenon

(iv) contains elements from potassium to krypton

7. Elements having atomic numbers 55 to 86 are present .....

(i) fourth period (ii) fifth period

(iii) sixth period (iv) seventh period

8. In the long form of periodic table alkali and alkaline earth metals are present in respectively .....

(i) first group and second group (ii) second group and first group

(iii) in first group only (iv) in second group only

9. Group 3 to 12 in the long form of periodic table are called .....

(i) respective elements **(ii) transition elements**

(iii) inner transition elements (iv) inert gases

10. Choose the incorrect statement.

(i) The chemical properties of element change along a period

(ii) The elements present in a group have identical chemical properties

(iii) The size of the atom increases along a period

(iv) The size of the atom increases along a group

11. ..... are called a coinage metals

(i) Copper, Silver and Gold (ii) Copper, Brass and Gold

(iii) Copper, Brass and Silver (iv) Copper Silver and Aluminium

12. Which metal is a constitute of haemoglobin?

(i) zn **(ii) Fe**

(iii) Ca (iv) Co

13. Given from pairs, identify the one which is an ore and the other a mineral.

(i) Bauxite, Cryolite (ii) Galena, Zinc blend

(iii) Haematic, Clay (iv) Bauxite and Zinc blende

14. The formula of cryolite is .....

(i) $Al_2O_32H_2O$ **(ii) Na_3AlF_6**

(iii) Al_2O_3 (iv) $NaAlO_2$

15. A metal A is not affected by dry air on heating to 800^o it burns brightly. It is a powerful reducing agent. It is used in alumina thermic process. The metal A is .....

(i) Fe (ii) Zn

(iii) Al (iv) Cu

16. Matte is .....

(i) a mixture of cuprous sulphide and ferrous sulphide

(ii) a mixture of cupric sulphide and ferrous sulphide

(iii) a mixture of cuprous sulphide and ferrous sulphate

(iv) a mixture of cupric sulphide and ferrous sulphate

17. Copper metal is heated with concentrated nitric acid. The gas evolved is .....

(i) nitrous oxide (ii) nitric oxide

(iii) nitrogen dioxide (iv) sulphurdioxide

18. Choose the correct statement from the following:

(i) Haematite ore is concentrated by froth flotation process

(ii) Haematite ore is concentrated by gravity separation

(iii) Copper pyrites is concentrated by gravity separation

(iv) Haematite ore is concentrated by leaching

19. Which of the following metals is purified by electrolytic refining?

(i) Fe **(ii) Cu**

(iii) Zn (iv) Hg

20. The chemical reaction that occurs in the blast furnace to give spongy iron in the extraction of iron from haematite is .....

(i) $FeO + SiO_2 \rightarrow FeSiO_3$ (ii) $CO_2 + C \rightarrow 2CO$

(iii) $Fe_2O_3 + 3CO \rightarrow 3Fe + 3Co_2$ (iv)$CaO + SiO_2 \rightarrow CaSiO_3$

21. Number of periods in modern periodic table is .....

(i) 7 (ii) 17

(iii) 18 (iv) 8

22. An amalgam is an alloy of metal with .....

(i) carbon (ii) hydrogen

(iii) mercury (iv) gold

23. Atomic number of iron is 26. Its electronic configuration is .....

(i) 2, 8, 8, 2 (ii) 2, 8, 8, 4

(iii) 2, 8, 14, 2 (iv) 2, 8, 14, 4

24. The percentage of purity of gold calculated for making ornaments is .....

(i) $\frac{24}{22} \times 100$ **(ii)) $\frac{22}{24} \times 100$**

(iii)) $\frac{20}{24} \times 100$ (iv)) $\frac{18}{22} \times 100$

25. Bauxite is used to extract aluminium. It can be turned as .....

(i) ore (ii) mineral

(iii) flux (iv) slag

26. To design the body of the aircraft, ... alloys are used.

(i) iron (ii) gold

(iii) silver **(iv) aluminium**

27. A process employed for the concentration of sulphide ore is .....

(i) gravity separation **(ii) forth floatation**

(iii) magnetic separation (iv) chemical method

28. modern periodic law states that the physical and chemical properties of elements are the periodic functions of their .....

(i) atomic weight (ii) mass number

(iii) atomic number (iv) neutron number

29. Second group of elements are called .....

(i) alkali metals **(ii) alkaline earth metals**

(iii) transition elements (iv) minor transition elements

30. The ore FeS_2 of iron is named as .....

(i) red haematite **(ii) iron pyrites**

(iii) magnetite (iv) cuprite

31. Air and water are necessary for ..... of iron.

(i) oxidation (ii) reduction

(iii) decomposition **(iv) rusting**

32. For making electromagnets, ... is used.

(i) pig iron **(ii) wrought iron**

(iii) steel (iv) amalgam

33. The magnetic oxide of iron is .....

(i) FeO (ii) Fe_2O_3

(iii)Fe_3O_4 (iv) Fe_4O_3

34. In the correction of iron, carbonic acid acts as .....

(i) electrolyte (ii) cathode

(iii) anode (iv) an angent

35. ..... alloy of aluminium is used to make scientific instruments.

(i) Magnalium (ii) Duralumin

(iii) Brass (iv) Bronze

36. Fe_2O_3. H_2O or hydrated ferric oxide is known as .....

(i) magnetic oxide of iron **(ii) rust**

(iii) the inert layer of iron oxide (iv) the electrolyte

37. Galena is the sulphide ore of .....

(i) aluminium (ii) iron

(iii) copper **(iv) lead**

38. ..... is the substance added to the ore to reduce the fusion temperature.

(i) flux (ii) slag

(iii) gangue (iv) mineral

39. The metal ..... plays a vital role in nuclear reactions releasing enormous energy called nuclear energy.

(i) copper (ii) chromium

(iii) uranium (iv) zirconium

40. The ore of Aluminium is .....

(i) Haematite (ii) Magnetite

(iii) Bauxite (iv) Siderite

41. Bauxite is the ore of .....

(i) Aluminium (ii) Sodium

(iii) Copper (iv) Iron

42. First period contains only two elements, one is hydrogen and the other is .....

(i) Nitrogen (ii) Oxygen

(iii) Helium (iv) Neon

43. The molecular formula for Bauxite is .....

(i) Al_2O_3 (ii) $Al_2O_3 \cdot 5H_2O$

(iii) $Al_2O_3 \cdot 2H_2O$ (iv) $Al_2O_3 \cdot 10H_2O$

13. Carbon and its Compounds

I.Choose the correct answer:

1. The electronic configuration of carbon and the number of valence electrons are respectively .....

(i) $1s^2\ 2s^2$, 4 **(ii) $1s^2\ 2s^2\ 2p^2$, 4**

(iii) $1s^2\ 2s^2\ 2p^2$, 6 (iv) $s^2\ 2s^2\ 2p^2$, 4

2. The force of attraction that exists between the carbon atoms in graphite is .....

(i) strong electrostatic forces of attraction

(ii) strong vander Waals force of attraction

(iii) weak vander Waals force of repulsion

(iv) weak vander Waals force of attraction

3. Carbon compounds are stable due to .....

(i) its electronic configuration (ii) its tendency to show isomerism

(iii) its small size (iv) its ability to combine with non metals

4. Choose the correct statement .....

(i) The tendency of carbon atom to form covalent bonds with other carbon atoms is known as catenation

(ii) Carbon can form C^{+4} and C^{-4} ions

(iii) The valency of carbon is always four

(iv) The hardness of diamond is due to the weak vander waals force that exist between carbon atoms

5. Which of the following form a set of homologous series?

(i) ethane, methane, propene (ii) ethane, methane, ethane

(iii) ethyne, propyne, but-l-yne (iv) ethyne, propyne, but-l-ene

6. Which of the following represent the functional group 'alcohols' .....

(i) –CHO (ii) CO

(iii) CHO (iv) COOH

7. The IUPAC name for CH_3COCH_3 is .....

(i) acetone (ii) dimethyl ketone

(iii) propanone (iv) propane

8. A compound has the molecular formula C_2H_6O. The functional group present in the compound is .....

(i) –OH (ii) CO

(iii) Cho (iv) COOH

9. Which of the following pairs of compounds are isomers?

(i) ethane and methane (ii) ethyne and propyne

(iii) but-l-ene and but-2-ene (iv) acetylene and ethyne

10. Four pairs of compounds are given below. Choose the pairs of compounds containing the same functional group .....

(i) Ethanol and ethanol (ii) propane and propyne

(iii) propanol and propanoic acid **(iv) Methanol and butanol**

11. Which of the following compound is an alkanone?

(i) CH_3CH_2OH **(ii) CH_3COCH_3**

(iii) CH_3CH_2CHO (iv) CH_3COOH

12. The IUPAC name for acetic acid is .....

(i) methanoic acid **(ii) ethanoic acid**

(iii) propanoic acid (iv) butanoic acid

13. The conversion of ethanol to ethane is .....

(i) inter molecular dehydration **(ii) intra molecular dehydration**

(iii) inter molecular hydration (iv) oxidation

14. $CH_3CH_2OH \rightarrow$ A. The compound A is .....

(i) CH_3CH_3 **(ii) $CH_2 = CH_2$**

(iii) CH_3CHO (iv) none

15. A compound A having the molecular formula C_2H_6O liberates hydrogen gas when heated with sodium. When heated wit acidified $K_2Cr_2O_7$, the orange colour of the $K_2Cr_2O_7$ changes to green. The compound A is .....

(i) CH_3CH_3 **(ii) CH_3CH_2OH**

(iii) CH_3OCH_3 (iv) CH_3CHO

16. $CH_3CH_2OH \rightarrow CH_3CHO + H_2$. This reaction is known as .....

(i) esterification (ii) dehydration

(iii) dehydrogenation (iv) oxidation

17. An example for decarboxylation reaction is .....

(i) heating ethanoic acid with sodium hydroxide

(ii) heating sodium ethanoate with soda lime

(iii) treating glucose with zymase

(iv) heating ethanol with sodium

18. Which of the following on heating liberate hydrogen gas?

1. ethanol, 2. Acetic acid, 3. Methane, 4. Acetone

(i) 1 only (ii) 2 only

(iii) 1 and 2 only (iv) 3 and 4

19. Choose the alkyne from the following .....

(i) methane (ii) ethane

(iii) ethane **(iv) acetylene**

20. Which of the following represent a pair of unsaturated hydrocarbon?

(i) ethane and ethyne **(ii) ethene and ethyne**

(iii) methane and ethyne (iv) acetic acid and formic acid

21. An organic compound decolourises the bromine water. It may be .....

(i) ethane **(ii) ethane**

(iii) propane (iv) butane

22. 'Rectified spirit' contains .....

(i) 95% methanol and 5% water **(ii) 95% ethanol and 5% water**

(iii) 15% ethanol and 95% water (iv) 50% ethanol and 50% water

23. On heating ethanol with conc. H_2SO_4 at 443 K gives .....

(i) ethane **(ii) ethane**

(iii) ethyne (iv) methane

24. Molasses contain nitrogenous matter. If the nitrogen content of the molasses is poor during fermentation ..... is added to fortify.

(i) ammonium chloride **(ii) ammonium sulphate**

(iii) yeast (iv) sulphyric acid

25. The saturated hydrocarbons form homologons series with the general formula C_nH_{2n+2}. The formula of the second member in this series is .....

(i) C_2H_2 **(ii)C_2H_6**

(iii) C_2H_6 (iv) C_2H_8

26. Ethanol on oxidation in the presence of alkaline potassium permanganate or acidified potassium dichromate gives the following acid .....

(i) propanoic acid (ii) butanoic acid

(iii) methanoic acid **(iv) ethanoic acid**

27. The functional group of carboxylic acid is .....

(i) –OH (ii) –CHO

(iii) >C = O **(iv) –COOH**

28. The term 'organic chemistry' was first used by the Swedish chemist .....

(i) Priestly **(ii) Berzelius**

(iii) Hall (iv) Dewer

29. The scientist who first prepared urea from an inorganic compound ammonium cyanate is .....

(i) Wohler (ii) Brovon

(iii) Berzelius (iv) Mendeleev

30. Kohinor diamond is a ..... carat diamond.

(i) 24 **(ii) 105**

(iii) 128 (iv) 22

31. Fullerene consists of ..... carbon atoms.

(i) 4 (ii) 32 (iii) 48 **(iv) 60**

32. Ethanol when reacts with sodium gives ..... gas.

(i) hydrogen (ii) methane

(iii) oxygen (iv) stearm

33. Percentage of sucrose in molasses is .....

(i) 40% (ii) 60%

(iii) 25% **(iv) 30%**

34. The method of preparation of alcohol from molasses is .....

(i) esterification (**ii) fermentation**

(iii) polymerisation (iv) reduction

35. The enzyme which helps in the conversion of glucose to ethanol is .....

(i) sucrose **(ii) zymase**

(iii) invertase (iv) kirase

36. the second hydrocarbon with the formula of C_nH_{2n+2} is .....

(i) C_2H_2 (ii) C_2H_6

(iii) C_2H_4 (iv) C_2H_8

37. ..... is a good conductor of electricity unlike other non-metals.

(i) Diamond **(ii) Graphite**

(iii) Nitrogen (iv) Carbon

38. Carbon compounds have low melting and boiling points because of the ..... nature.

(i) covalent (ii) ionic

(iii) coordinate (iv) metallic

39. The chemical properties of the members of the homologous series are .....

(i) different **(ii) similar**

(iii) various (iv) not similar

40. The general formula of alkynes is .....

(i) C_nH_{2n+2} (ii) C_nH_{2n}

(iii) C_nH_{2n-2} (iv) C_nH_{2n+4}

41. The IUPAC name of the compound $CH_3\ CH_2\ CH_3$ is .....

(i) methane **(ii) propane**

(iii) n-butane (iv) butane

42. ROH is alkanol, therefore, $CH_3\ CH_2\ OH$ is .....

(i) methanol (ii) propanol

(iii) ethanol (iv) ethanol

43. Alkanes have the general formula $C_n H_{2n+2}$. The molecular formula of the first hydrocarbon is .....

(i) CH_4 (ii) C_2H_4

(iii) C_2H_6 (iv) C_2H_2