KANCHI KALVI'S CHEMISTRY QUESTION BANK

X STD – SCIENCE (CHEMISTRY)

UNITS – 9 to 13

9. SOLUTIONS

1m	2m	3m
√	√	X

(INTERIOR QUESTIONS)

One Marks

1. The process of food assimilation by man is in the form of **solution.**
2. **Blood, Lymph** are in the form of solution to decide the physiological activity of human beings.
3. A solution is a **homogeneous mixture** of two or more substances.
4. All solutions exist in **homogeneous** form.
5. If a solution contains two components, then it is called a **Binary solution.**
6. An example for a binary solution is **salt solution. (or) sugar solution.**
7. The component present is **lesser** amount by weight is called **solute.**
8. The component present in a **larger** amount by weight is called **solvent.**
9. A **solvent** is a dissolving medium.
10. Solute + solvent ▸ **solution.**
11. Based on the **particle size** of the substance, the solution are divided into **3 types.**
12. **Sugar in water** is a example for True solutions.
13. Colloidal solutions is a **heterogeneous** mixture.
14. The substance distributed as particles is called **dispersed phase.**
15. The continuous phase in which the colloidal particles are dispersed is called **dispersion medium.**

16. Dispersed phase + Dispersion ~~medium~~ colloidal solution.
17. Milk is a example for colloidal solution.
18. Suspension is a heterogeneous mixture of small insoluble particles in a solvent.
19. An example for suspension is chalk powder in water.
20. In suspension the particles of solid stay in clusters.
21. The phenomenon by which colloidal particles scatter light is called Tyndall effect.
22. When sunlight passes through window of the class rooms its path is visible due to scattering of light. This is an example for Tyndal effect.
23. The phenomenon by which the colloidal particles are in continuous random motion is called Brownian motion.
24. Brownian motion is named in honour of Robert Brown.
25. An example for Brownian motion is the motion of the particles in suspension of pollen grains in water.
26. 1 A° = 10^{-10} m
27. True solution is not visible even under ultra microscope.
28. Colloidal solution scatters light.
29. The size of the particles of the True, colloidal & suspension solutions are respectively. 1 A° to 10 A° , 10 A° to 2000 A° , more than 2000 A°.
30. Based on the type of solvent solutions are classified into 2 types.
31. The solution in which water acts as a solvent is called aqueous solution.
32. An example for aqueous solution is sugar solution. (or) salt solution.
33. The solution in which any liquid other than water acts as a solvent is called non aqueous solution.
34. Benzene (or) ether (or) CS_2 is the example for non aqueous solvent.
35. Solution of sulphur in CS_2 is an example for non-aqueous solution.

36. Based on the amount of solute in the given solution, solutions are classified in to **3 types.**

37. **In the unsaturated** solution, addition of solute is possible till the solution reaches the point of saturation.

38. In saturated solution **no more solute** can be dissolved.

39. An example of saturated solution is saturated solution of **CO_2 in H_2O.**

40. In a saturated solution **36 g of NaCl** can be dissolved in 100 ml of water at room temperature.

41. In nature **Nitrogen in earth soil** is an example for saturated solution.

42. Based on the physical state of the solute and the solvent the solutions are of **9 types.**

43. An example for gas in solid is **cork.**

44. Smoke is an example for **solid in Gas.**

45. A solution containing **low concentration** of solute is known as dilute solution.

46. A solution containing **high concentration** of solute is known as concentrated solution.

47. Dilute and concentrated solutions are relative terms and they have only **quantitative** meaning.

48. An example of dehydrating agent is **anhydrous calcium chloride.** (absorbs moisture)

49. Solubility of a solid $= \frac{\text{Weight of solute}}{\text{Weight of solvent}} \times 100$

50. The solubility of ionic compounds NaBr. NaI, $NaNo_3$ are respectivey **95g, 184g, 92g.**

51. **Temperature, Nature of solute (or) solvent & pressure** are affecting factors of solubility.
52. The increase in temperature, solubility **increases.**
53. In exothermic process, solubility **decreases** with increase in temperature.
54. Solubility of **KNO_3 increases** with the increase in temperature.
55. Solubility of **CaO decreases** with increase in temperature.
56. A polar compound dissolves in **polar** solvent.
57. A polar compound is **less soluble (or) insoluble** in a non polar solvent.
58. **Effect of pressure** is observed only in the case of gases.
59. **Water** is an example for polar solvent.
60. **Common salt** is an example for **Polar compound.**
61. An **increase** in pressure increases the solubility of a gases, given by Henry's law.
62. An example of effect of pressure is **CO_2 gas** is filled in soft drinks.
63. **Dust particles** scatter the light making the path of light visible in the room.
64. Robert Brown is a **biologist.**
65. Solubility of $CUSO_4$ in H_2O is **20.7grams** at **20° C.**
66. **Helium – oxygen mixture** , used for deep sea diving.
67. Earth soil cannot store more **Nitrogen.**

68. Weight % = $\dfrac{\text{wt. of the solute}}{\text{wt. of the solute + wt. of the solvent}}$ X 100

69. An empty evaporating dish weighs **20 grams.**
70. (a) Sol. Of potassium sulphate in water at 60°C is **16 grams.**

(b) Sol. Of NaNo3 at 20°C is 87.7 grams in 100 gm of water.

2 Marks - (with page No.)

1. Binary solution – (134)
2. Homogeneous mixture – (134)
3. Solute and solvent – (135)
4. Define : True Solution – (135)
5. Define : Colloidal Solution – (135)
6. What are D.Phase and D.medium – (135)
7. Define : Suspension – (136)
8. What is Tyndall effect? – (136)
9. What happens when light is passed through True solution? – (136)
10. State the reason, that the light is passed through colloidal solution? – (136)
11. What is Brownian movement? – (136)
12. Brownian motion is named in the honour of ROBERT BROWN – Why? – (136)
13. Differ True and colloidal soln. – (137)
14. Differ colloidal and suspension – (137)
15. Define : Aqueous soln with eg. – (137)
16. Define : Non-Aqueous soln with eg. – (137)
17. Define : Unsat Soln. – (137)
18. Define : Sat. Soln. - (137)
19. Mention the types of soln. based on the particle size with eg. - (135)
20. List out the types of soln. based on the types of solvent with eg. – (137)
21. Write the types of solns. Based on amount of solute with eg's. – (137)
22. Give examples for Non-Aqueous solvents. – (137)
23. Memory well - Tab column. – (137)
24. What is SUPER SATURATED SOLN.? – (138)
25. N2 in earth soil is a example for saturated soln? why? – (138)
26. Memory well the Tab. Column. – (138)
27. Define : solubility with eg's – (139)
28. What are dilute and concentrated solns.? – (139)

29. Write the formula for solubility of a solid – (139)
30. Memory well (Blue Box) – (140)
31. Name the factors affecting solubility. – (140)
32. Write about Exothermic process based on effect of temp. On solubility. – (140)
33. Write about ENDOTHERMIC process based on effect of temp on solubility. – (140)
34. Common salt dissolves in H2O – why? – (140)
35. What is Effect of pressure on solubility? Give eg. – (140)
36. State : HENRY'S LAW. – (140)
37. Atmosphere is colloidal in nature.
    a) What is the average size of the dust particles in air? (10A° to 2000A°)
    b) Name the dispersed phase in the at mosphere. (Dust particles, gases in the air)

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10. ATOMS AND MOLECULES
(INTERIOR QUESTIONS)

2 Marks – (with page No.)

1. State Avogadro's law. – (144)
2. Define atomicity. – (144)
3. What are called. a) Isotopes b) Isobars c) Isotones. Give an example. – (145)
4. Write any 2 applications of Avogadro's law. – (146)
5. Define atom. – (147)
6. Define molecule. (147)
7. Give the differences between atom and molecule. – (147)
8. What are Homoatomic molecules? Give eg. – (148)
9. What are Heteroatomic molecules? Give eg. – (148)

10. Define RAM based on hydrogen scale. – (148)
11. Define RAM based on carbon scale. – (148)
12. Define gram atomic mass. Give an example. – (148)
13. Define 1 amu. – (148)
14. Define RMM based on hydrogen scale. – (148)
15. Define RMM based on carbon scale. – (148)
16. Define Gram Molecular Mass. – (149)
17. Define Mole. – (149)
18. Define Avogadro number. – (149)
19. State the law of Gay Lussac's Combining volume. – (146)
20. Write the classification of atomicity with examples. – (145)
21. Give eg's for mono, di, tri and poly atomic molecule – (145)
22. Explain the terms in the equation $E = mc^2$. – (144)
23. Define: Relative molecular mass. – (146)
24. Define: Vapour density – (146)
25. Which paved the way for modern Atomic Theory. – (143)
26. How to arrive the value of GRAM MOLAR VOLUME OF OYYGEN. –(146)
27. Write the Values of gramatomic masses for C, N_2 , O_2 , H_2 , Na, A1.- (148)
28. Examples and follow-up problems in. – (149, 150, 151)
29. D
30. efine: Molar volume. – (151)
31. What is one mole of a substance. – (149)

5 Marks

1. How will you deduce the atomicity of elementary gases? - (144 , 145 , 146)
2. List out the applications of Avogadro's law. – (146 , 147)
3. What is a molecule? Explain its types. –(147 , 148)
4. Explain RAM based on Hydrogen and carbon scale. - (148)

5. Explain RAM based on Hydrogen and carbon scale. – (148)

11.CHEMICAL REACTIONS

1m	2m	5m
√	√	X

One Mark

1. Silver articles become tarnished due to the formation of **Ag_2S (Silver Sulphide).**
2. The chemical name of quick lime is **Calcium oxide (CaO).**
3. The chemical name of slaked lime is **Calcium hydroxide ($Ca(OH)_2$). (used for white washing)**
4. **$CaO + H_2O \rightarrow Ca(OH)_2$** this reaction is an example for **exothermic reaction.**
5. When lead nitrate reacts with potassium iodide the formation of yellow precipitate is

   Lead iodide. (Both solutions are colour less)
6. $CaCo_3$ + dil. $2HCl \rightarrow$ **$CaCl_2 + H20 + CO_2\uparrow$**
7. $Pb(NO3)2 + 2\ KI \rightarrow$ **$PbI_2\downarrow$** + $2KNO_3$
8. When CO2 is passed through slaked lime, a milky white precipitate **$CaCO_3$ (Calcium Carbonate)** is formed.
9. The chemical name of marble is **$CaCO_3$ (Calcium Carbonate). (shiny finish to the walls)**
10. The substances taking part in the reaction are known as **reactants.**
11. All the chemical reactions are classified into **six broad** categories.
12. The chemical reaction in which two (or) more reactants form a single product is.

    Combination reaction. ($2Mg + O2 \rightarrow 2MgO$)
13. New substances formed as a result of reaction are called **products.**

14. **Burning of Coal (Combustion of coal), combustion of hydrogen (formation of water)** is an example of combination reaction.
15. Burning of Mg ribbon is **combination** reaction.
16. $CuCO_3 \longrightarrow$ **$CuO + CO_2$** $CuCO_3$ is **Green** colour and CuO is **black** colour..
17. In CuO (Copper 11 Oxide) Valency of Copper is **2.**
18. In Cu_2O (Copper I Oxide) Valency of Copper is **1.**
19. $2Pb(NO_3)_2 \xrightarrow{\Delta}$ **$2PbO + 4NO_2 + O_2$** NO_2 gas is **reddish brown colour.**
20. **Decomposition of limestone** is an example of decomposition reaction.
21. All chemical changes are accompanied by **chemical reactions.**
22. **Decomposition of ammonium dichromate** is an example of Decomposition reaction . (green vapours)
23. Decomposition of ammonium dichromate is called **Chemical Volcano** **$[(NH4)_2Cr_2O_7]$**
24. Copper Sulphate solution is **blue** colour and Ferrous Sulphate solution is **green** colour.
25. When a piece of Zinc is dipped in CuSO4 solution, the colour changes from **blue to colourless.**
26. Copper is less reactive than **lead and zinc.**
27. $Zn + CuSO_4 \longrightarrow$ **$ZnSO_4 + Cu$**
28. Any reaction that produces a precipitate is called **precipitation** reaction.
29. $Pb + CuCl_2 \longrightarrow PbCl_2 + Cu$ is an example of **displacement reaction.**
30. Single compound breaks down to produce two of more substances are called **decomposition reaction.**
31. A more reactive element displaces a less reactive element from its compound is called **displacement reaction.**
32. Series arrangement of metals in increasing order of their reactivity is called **reactivity series.**
33. The most reactive metal is **potassium** ; where as less reactive metal is **platinum.**

34. O_2 is the most essential element for sustaining life
35. **Chemical changes** are more permanent than physical changes.
36. **Electroplating, ext. of metals** are based upon the redox reactions.
37. Barium Sulphate precipitate colour is **white** and **insoluble** in water.
38. $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 \downarrow + 2KNO_3$ is an example of double displacement reaction.
39. $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 \downarrow + 2NaCl$ is an example of double decomposition reaction.
40. Any reaction in which exchange of ions between two reactants occur, leading to the formation of two different products are called **Double decomposition reaction (or) Double displacement reaction.**
41. $CuSO_4 + H_2S \rightarrow CuS \downarrow + H_2SO_4$
42. Oxidation-reduction reaction is also known as **redox reaction.**
43. Oxidation reaction involves **addition of oxygen.**
44. Oxidation reaction involves **removal of hydrogen.**
45. Oxidation reaction involves **loss of oxygen.** [LEO]
46. Reduction reaction involves **addition of hydrogen.**
47. Reduction reaction involves **removal of oxygen.**
48. Reduction reaction involves **gain of electron.** [GER]
49. A chemical reaction in which oxidation and reduction take place simultaneously is called **red ox reaction.**
50. Food stuffs, become stale, due to **oxidation.**
51. If hydrogen gas is passed over this black coloured copper (II) oxide (CuO) it turns **brown** colour.
52. $CuO + H_2 \rightarrow Cu + H_2O$
53. $H_2S + Cl_2 \rightarrow 2HCl + S \downarrow$ is an example of redox reaction.
54. $CuO + H_2 \rightarrow Cu + H_2O$ is an example of redox reaction.

55. The chemical reactions which proceed with the evolution of heat energy are called **exothermic** reaction. (Detergent dissolved in water)

56. $N_2 + 3H_2 \rightarrow 2NH_3 + Heat$ is an example of exothermic reactions.

57. All combustion reactions are **exothermic reactions.**

58. The chemical reactions which proceed with the absorption of heat energy are called **endothermic reactions.** (Giucose is kept in our tongue)

59. $2NH_3 + Heat \rightarrow N_2 + 3H_2$ is an example of endothermic reactions.

60. Rate of the chemical reaction is defined as change in concentration of any one of the reactant or product per unit time.

61. –ve sign indicates **decrease in concentration of reactant.**

62. +ve sign indicates **mcrease in concentration of product.**

63. $A \rightarrow B$ Rate of the reaction is $-\frac{d[A]}{dt} = +\frac{d[B]}{dt}$

64. The reaction of Magnesium is faster with **HCl** comparing with acetic acid. (CH_3COOH)

65. **Hydrochloric acid** is stronger than acetic acid.

66. **Nature of the reactant** influences the rate of the reaction.

67. $Mg + 2HCl \rightarrow MgCl_2 + H_2\uparrow$

68. **Manganese-di-oxide** (MnO_2) is an example for a catalyst.

69. Double displacement reaction is otherwise known as **Double decomposition reaction.**

70. As the concentration of the reactants increases the rate of the reaction is **increases.**

71. Greater the surface area **faster** the rate of reaction.

72. Increase in the temperature **increase** the rate of reaction.

73. $2KClO_3 \xrightarrow[MnO_2]{\triangle} 2KCl + 3O_2\uparrow$

74. A substance which alters the rate of the reaction without undergoing any change in mass and composition is known as **catalyst.**
75. The factors which affects the rate of the reaction is **Nature of the reactants. Concentration of the reactants, Surface area, temperature and catalyst.**
76. The acid secreted in the stomach of human is **hydrochloric acid.** (Stomachfluid)
77. In Latin, the word **Acidus** means sour taste.
78. Acid changes the colour of the litmus paper from **Blue to Red.**
79. In acidic medium phenolphthalein is **colourless.**
80. In acidic medium methyl orange gives **pink** colour.
81. In alkaline medium phenolphthalein gives **pink** colour.
82. In alkaline medium methyl orange gives **yellow** colour.
83. Tannic acid is present in **Tea.**
84. Malic acid is present in **Apple.**
85. Citric acid is present in **Lemon.**
86. Tartaric acid is present in **Grape.**
87. Oxalic acid is present in **Tomato.**
88. Acetic acid is present in **Vinegar.** (food preservative)
89. Lactic acid is present in **Curd & Milk.**
90. Formic acid is produced by **red ants.**
91. Acids are classified into **two** types based on their sources. (organic & In-organic)
92. Acids present in plants and animals are **organic acids.**
93. **HCOOH, CH_3COOH** is an example of organic acids.
94. **CH_3COOH** is a weak acid. (HCOOH)
95. **HCl** is a strong acid. (HNO_3, H_2SO_4, etc.,)
96. Acids from rocks and minerals are **inorganic acids.**
97. Inorganic acids are called as **mineral acids.**
98. Inorganic acids (or) mineral acids are called as **Hydracid (or) oxy acid.**

99. Basicity or an acid refers to number of **replaceable hydrogen** atoms in one molecule.

100. The basicity of hydro chloric acid is **1.**

101. The basicity of HNO3 is **1.**

102. The basicity of H2SO4 is **2.**

103. The basicity of H2CO3 is **2.**

104. The basicity of H_2PO_3 (Sulphurous acid) is **2.**

105. The basicity of H3PO3 (orthophosphoric acid) is **3.**

106. Hydrogen gas burns with a **poping** sound.

107. Acid which gives one hydrogen ions per molecule of the acid in solution is called **monobasic acid.**

108. Acid which gives two hydrogen ions per molecule of the acid in solution is called **Dibasic acid.**

109. Acid which gives three hydrogen ions per molecule of the acid in solution is called **Tribasic acid.**

110. The basicity of CH_3COOH is **1.**

111. Acids which ionise completely in water is called **strong acids.**

112. Acids which ionise partially in water is called **weak acids.**

113. Acids are classified into **three types** based on their basicity.

114. Acids are classified into **two** types based on ionization.

115. Acids are classified into **two** types based on their concentration.

116. Based on concentration depending on the **percentage (or) amount of acid** dissolved in water.

117. Acid having a relatively high percentage of acid in its aqueous solution is called

concentrated acids.

118. Acid having relatively low percentage of acid in aqueous solution is called **Dilute acid**.

119. The atmosphere of the planet venus is made of thick layer of **sulphuric acid.**

120. $Zn + 2HCl \rightarrow ZnCl_2 + H_2\uparrow$ (Displacement reaction)

121. **Limestone, chalk and marble** are different physical forms of calcium carbonate.

122. Metal + dilute acid → Salt + Hydrogen.

123. **PH values** decides whether the solution is Acidic, Basic or Neutral.

124. **Cu, Ag** metals do not liberate hydrogen gas on reaction with acids.

125. $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$

126. $Na2CO3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2\uparrow$ (

127. $NaHCO3 + HCl \rightarrow NaCl + H_2O + CO_2\uparrow$ (

128. Metal carbonate or metal bi carbonate + Acid → **Salt + Water + Cabondioxide.**

129. $CuO + 2HCl \rightarrow$ CuCl2 + H2O. In this reaction colour changes from **black to green.**

130. Metallic oxide + Acid → **Salt + Water.**

131. An acid produces **hydrogen ions** in water.

132. Hydrogen ions cannot exist alone, but they exist in the form of **hydronium ions** (H_3O^+)

133. $HCl + H2O \rightarrow H_3O^+ + Cl^-$

134. **Sulphuric acid** is called the **"King of Chemicals"**

135. **Sulphuric acid** is used in car battery.

136. **Nitric acid** is used in the production of (ammonium nitrate) – used as Fertilizer.

137. **HCl** is used as cleaning agent in toilet.

138. **Tartaric acid** is a constituent of baking powder.

139. **Benzoic acid (sodium benzoate)** is used in food preservation.

140. **Carbonic acid (H_2CO_3)** is used in aerated drinks.

141. Base is a substance which releases **hydroxide ions** when dissolved in water.

142. Base is **bitter** in taste.

143. Acid is **sour** in taste.

144. Base turn **red litmus to blue.**

145. Base is **soapy** to touch.

146. **Washing soda, caustic soda (NaoH)** and **caustic potash(KOH)** is an example of bases.

147. Bases are classified into **two** types based on ionisation.

148. Bases are classified into **three** types based on their acidity.

149. Bases are classified into **two** types based on the concentration.

150. Based on the concentration depending on the **percentage (or) amount of base** dissoived in water.

151. **NaOH, KOH** is a strong bases.

152. **NH_4OH,$Ca(OH)_2$** is a weak bases.

153. Bases which ionise completely in aqueous solution is called **strong base.**

154. Bases which ionises partially in aqueous solution is called **weak base.**

155. Base which ionises in water to give one hydroxide ion per molecule is called **Monoacidic base.** (NaOH , KOH)

156. Base which ionizes in water to give two hydroxide ions per molecule is called **Diacidic base.**

[$Ca(OH)_2$, $Mg(OH)_2$]

157. Base which ionizes in water to give three hydroxide ions per molecule is called **Triacidic base.** [$A1(OH)_3$]

158. The acidity of NaOH & KOH is **1.**

159. The acidity of Ca(OH)2 & Mg(OH)2 is **2.**

160. The acidity of Al(OH)3 & Fe(OH)3 is **3.**

161. An alkall having a relatively high percentage of alkali in its aqueous solution is called

concentrated alkali.

162. An alkali having a relatively low percentage of alkali in its aqueous solution is called **Dilute alkali.**

163. Bases which dissolve in water are called **alkalies.**

164. All alkalies are **bases,** but not all bases are **alkalies.**

165. NaOH and KOH are **alkalies.**

166. Al(OH)3, Zn(OH)2 are **bases.**

167. $Zn + 2NaOH \rightarrow$ **$Na_2ZnO_2 + H_2$** (sodium zincate)

168. Metal + base → **Salt + hydrogen**

169. **Cu, Ag, Cr** metals do not react with sodium hydroxide.

170. Base + non metallic oxide → **Salt + water.**

171. $2NaOH + Co2 \rightarrow$ **$Na2CO_3 + N_2O.$**

172. When CO2 is passed through lime water, turns **milky.**

173. Lemon juice changes the colour of the litmus paper from **blue to red.**

174. Washing soda solution changes the colour of the litmus paper from **Red to Blue.**

175. Soap solution changes the colour of the litmus paper from **red to blue.**

176. Soft drink changes the colour of the litmus paper from **blue to red.**

177. Lemon juice with phenolphthalein gives **colourless.**

178. Lemon juice with methyl orange gives **pink colour.**

179. Washing soda solution with phenolphthalein gives **pink colour.**

180. Washing soda solution with methyl orange gives **vellow colour.**

181. Soap solution with phenolphthalein gives **pink colour.**

182. Soap solution with methyl orange gives **yellow colour.**

183. Soft drink with phenolphthalein gives **colourless.**

184. Soft drinks with methyl orange gives **pink colour.**

185. $NaOH + HCl \rightarrow$ **$NaCl + H_2O$**

186. Acid + Base → **Salt + Water.**

187. **Sodium hydroxide** is used in manufacture of soap.

188. **Calclum hydroxide** is used in white washing the buildings.

189. **Magnesium hydroxide** is used as a medicine for stomach troubles.

190. **Ammonium hydroxide** is used to remove grease strains from clothes.

191. $P^H = -\log_{10}[H^+]$, $P^{OH} = -\log_{10}[OH^-]$, $P^H + P^{OH} = 14$, $P^H = 14 - P^{OH}$.

192. PH scale was introduced by **S.P.L.Sorenson.**

193. The PH of neutral solution is **equal to 7.**

194. The PH of acidic solution is **less than 7.**

195. The PH of basic solution is **greater than 7.**

196. The hydrogen ion concentration of a solution 1.0×10^{-9} M then the solution is **basic.**

197. The hydrogen ion concentration of a solution 1.0×10^{-9} M then the P^H is **9.** (see the power of 10)

198. The hydrogen ion concentration of a solution is 0.001 M then the P^H is **3.** (count no.of zeros)

199. They hydroxyl ion concentration of a solution is 1.0×10^{-9} M then the P^H is **5.** (14-9)

200. The PH of coffee is **4.4 – 5.5 .**

201. The PH of Human Saliva is **6.5 – 7.5 .**

202. The PH of house hold ammonia is **12.0.**

203. The PH of Lemon juice is **2.2 -2.4 .**

204. The PH of Tomato juice is **4.1 .**

205. Tooth pastes are generally **alkaline** in nature. (basic)

206. At PH level **6.9** the body becomes prove to viral infections like colds, cough and flu.

207. Cancer cells thrive inside the body at a P^H of **5.5 .**

208. The PH of a normal, healthy, human skin is **4.5 to 6.**

209. The PH of stomach fluid is approximately **2.0 .**

210. The PH range of human blood is **7.35 – 7.45 .**

211. The PH of mouth falls below **5.5** the enamel gets corroded.

212. Citrus fruits require slightly **alkaline** soil.

213. Rice requires **acidic** soil.

214. Sugar cane requires **neutral soil.**

215. The PH of rain water is approximately **7.**

216. Rain water is polluted by **SO_2 and NO_2,** acid rain occurs, bringing the P^H value down to **5.6.**

217. **Methanoic acid** causing burning pain.

218. **Methanoic acid** is present in **nettle plant.**

219. Salts are classified into **four** types.

220. **Normal salt** is obtained by complete neutralization of an acid by a base.

221. **Acid salts** are derived by the partial replacement of hydrogen ions of an acid by a metal.

222. **$NaHSO_4$, $NaHCO_3$** are acid salts.

223. **Basic salts** are derived by the partial replacement of hydroxide ions of a diacidic bas (or)

triacidic base by an acid radical.

224. **Pb(OH)Cl** is basic salt.

225. **Double salts** are formed by the combination of saturated solution of two simple salts in

equimolar ratio followed by **crystallization.**

226. **NaCl** is used in daily food and as preservative. (sodium chloride)

227. **Na_2CO_3 (washing soda)** is used in softening hard water. (sodium carbonate)

228. **$NaHCO_3$(Baking soda)** is used in making baking powder.(sodium bicarbonate.)

229. Baking powder is the mixture of **baking soda** and **tartaric acid.**

230. **$NaHCO_3$** is an ingradient in antacid.

231. **Baking soda** neutralizes excess of acid in the stomach.

232. The formula of bleaching powder is **$CaO.Cl_2$**

233. The chemical name of bleaching powder **Calciumoxy chloride.**

234. **Bleaching powder** is used for bleaching cotton and linen in the textile industry.

235. The formula of plaster of Paris is **$CaSO4 , ½ H_2O.$**

236. The chemical name of plaster of Paris is **Calcium Sulphate hemi hydrate.**

237. **Plaster of Paris** is used for plastering fractured bones.

238. **Plaster of Paris** is used making caste for statues.

239. Acidity of base refers to **number of replaceable hydroxide ions** in one molecule of a base.

240. **Salt** can produce positive and negative ions when dissolved in water.

241. An example for vigorous volcano is **Ammonium di-chromate.**

242. An example for silent volcano is **Baking soda.**

243. Metal carbonates, metal bicarbonates and metal oxides are **basic.**

244. Reaction between an acid and a base is called Neutralisation Reaction.

2 Marks

1. Why the silver anklet has got tarnished? (154)
2. How does lead nitrate reacts with potassium Iodide Give equation. (1m 5,7)
3. How does calcium oxide react with water? Give its equation [$CaO + H_2O \rightarrow Ca(OH)_2$]
4. How does calcium carbonate react with dilute hydrochloriacid ? Give its equation. (1m 6)
5. Why the slaked lime used in white washing?(155)
6. What are reactants & products?(155)
7. What are combination reaction? Give example.(156)
8. What are decomposition reaction? Give examples.(157)
9. What are displacement reaction ? Give examples.(158)

10. What is called reactivity saries?(1m-32)

11. What are double decomposition reaction (or) double displacement reaction?Give examples.(159)

12. What is oxidation? Give examples.(159)

13.What is reduction ? Give examples.(159)

14. What is redox reaction ? Give examples.(159)

15. Food stuffs become stale – Why?(160)

16. What is exothermic reaction ? Give its equation. (160)

17. What are endothermic reaction? Give its equation. (160)

18. Define rate of the Chemical reaction. (160)

19. What are the factors influencing the rate of the chemical reaction?(161)

20. How the nature of the reactant influences the rate of the reaction?(161)

21. How the concentration of the reactant influences the rate of the reaction?(161)

22. How the temperature influences the rate of the reaction?(161)

23. How the catalyst influences the rate of the reaction?(162)

24. What are catalyst? Give eg. (162)

25. Write short note on acids.(162)

26. Write short note on bases.(167)

27. How are acids classified based on their sources?(163)

28. How are acids classified based on their basicity?(163)

29. Define the term basicity of an acid.(163)

30. How are acids classified based on lonisation? (164)

31. How are acids classified based on concentration? (164)

32. Concentrated sulphuric acid is diluted by adding acid to water and not vice versa. Why? (164).

33. What are the different physical forms of calcium carbonate. (164)

34. How does metal react with acids? Give its equation. (164)

35. How does metal carbonate react with acids? Give its equation. (165)

36. How does metal bicarbonate react with acids? Give its equation. (165)
37. How does metallic oxide react with acids? Give its equation. (166)
38. How does water react with acids? Give its equation. (166)
39. Mention the uses of acids. (166)
40. How are bases classified based on ionisation? (166)
41. How are bases classified based on their acidity? (166, 167)
42. Define the term acidity of a base. (167)
43. How are bases classified based on the concentration? (167)
44. What are alkalies? Give eg. (167)
45. What is a PH paper? (170)
46. How does metal react with base? Give its equation. (167)
47. How does non-metallic oxide react with base? Give its equation. (167)
48. How does water react with base? Give its equation. (167)
49. How does acids react with base? Give its equation. (168)
50. What is neutralization reaction? Give example. (168)
51. Mention the uses of bases. (168)
52. Define PH scale. (169)
53. Revise the problems in. (169 , 170)
54. What are the importance of PH in everyday life? (171) (write the headings only)
55. Write short notes on salts. (171)
56. What are the importance of PH in soil? (171)
57. What are the importance of PH in rain water? (171)
58. What are the importance of PH in human body? (171) (Any 2 points)
59. How the salts are classified? (171) (write the Headings only)
60. What are normal salts? Give eg. (171)
61. What are called acid salts? Give eg. (171)
62. What are called basic salts? Give eg. (171)

63. What are called double salts? Give eg. (171)
64. Mention the uses of common salt. (172)
65. Write the uses of washing soda. (172)
66. Write the uses of baking soda. (172)
67. Write the uses of bleaching powder. (172)
68. Write the uses of plaster of Paris. (172)
69. How the surface area of the reactant influences the rate of the reaction? (161)
70. Powdered CaCO3 reacts more quickly with HCl than marble chips why? (161)
71. Can copper displace zinc or lead from their salt solutions? (158)
72. What is a precipitation reaction? Give eg. (158)
73. Name the processes that are based on the red ox reaction. (159)
74. Hydrogen ions exists only in the form of H_3O^+ in H_2O – why? (166)
75. Give two examples for strong and weak acids. (163)

-*-*-*-*- All the Best -*-*-*-*-

12.(PERIODIC CLASSIFICATION OF ELEMENTS)

(INTERIOR QUESTIONS)

(one marks)

1.As on date **118** elements are Known.

2.First Element-**Hydrogen**(H_2):Last Element**: Copernicium**

3.Element Classified On Their **Similarities** In Properties

4.**Henry Gwyn Jeffreys**Moseley (physicist) discovered-**atomic number**5.Moseley used –**x-rays** to Discover Atomic No.

6.Real Credit For Preparing Periodic Table Goes to-**Mendeleev**

7.Moseley Plotted-**Sq. Root Of Frequencies againstAtomic Nos.**

8.Moseley Obtained the Plott as a-**Straight Line**

9.**At No.(Z)-**No.Of Electrons Or Protons Revovlesaround the Nucleus.

10. Modern Periodic Table was Based On - **Atomic No.**

11.Physical And Chemical Properties are Periodic Functions On Atomic Number-**Periodic Law.**

12.In Periodic Table Elements are In-**Increasing Order Of Atomic Number.**

13.P.Table Based On Electronic Configuration Of Elements-**Long Form Of Periodic Table.**

14.Horizontal Rows are Called-**PERIODS.**

15.Vertical Coloumns are Called –**GROUPS**

16.**Shortest Period** –Periods 1 and 2. (H_2 and He)

17.**Longest Period** –Periods 4 to 7.

18.Modern Periodic Table Divided Into –**Four Blocks (s,p,d,f)**

19.In Periodic Table –There are **7 Periods** and **18 Groups**.

20.First Period-Atomic No.(1,2) –**H_2 and Helium**.

21.Second Period –Atomic Nos.(3 to 10)-**Lithium to Neon**.

22. Third Period –Atomic Nos.(11 to 18)-**Sodium to Argon.**

23.Fourth Period-Atomic Nos.(19 to 36)-**Potassium to Krypton**.

24. Fifth Period –Atomic Nos.(37 to 54)-**Rubidium to Xenon.**

25.Sixth Period –Atomic Nos.(55 to 86)-**Ceasium to Radon**.

26.Seventh Period-Atomic Nos.(87 to 118)-**Francium to Copernicium.**

27.In 7^{th} Period Only 26 Elements are authenciated by IUPAC.

28.**IUPAC**- International Union of Pure and Applied Chemistry.

29.First Group Elements **– Alkali Metals**

30.Second Group Elements- **Alkaline Earth Metals**.

31.Groups Three to Twelve –**Transition Elements**.

32.**Normal (Or) Main Group (Or) Represent**.**Elements** –Group 1,2 and 13,18.

33.Group 13- **Boron Family**

34.Group 14- **Carbon Family**.

35.Group 15**- Nitrogen Family**: Group16-**Chalcogen** Family.

36.Group 17-**Halogen Family**; Group18-**Noble (Or) Inert gases**.

37.Lanthanides, Actinides which forms from Part Of **–Group**3.

38.Lanthanides and Actinides are Called –**Inner Transition Elements**.

39.Atomic Size Of Elements In Period-**Decreases From Left to Right**

40.Metalic Character Of Elements In Period -**Decreases with Non-Metallic Character.**

41.Elements in a group have –**same no.of.electrons in valence shell**.

42.Elements in a group have -**same valency.**

43. .Elements in a group have-**same chemical properities**.

44.Atomic radii of the elements in group-**increases downwards**.

45.Periodic table separates –**metals and non-metals**.

46.**Non-metal** in periodic table present in –**upper right corner**.

47.Lanthanides and Actinides are present in –**bottom of p.table**.

48.Position of **hydrogen is not fixed** till now.

49. **Last element** authenciated by IUPAC is **coperinicium (Cn_{112})**

50. **Silvery white metal** to build aircraft –**Aluminium(Al**)

51.**Lustrous steel** metal to make machineries,bridges –**Iron (Fe).**

52.**Reddish brown metal** to make coins –**copper (Cu).**

53.**Metals** are greatest if they are **alloyed** (combined) together.

54.**Metallugery** is as old as our civilization.

55.**First metal** used for making utensils ,weapons -**Copper**.

56.**Metals** plays a significant role **in our life.**

57.**Defence equipments** -titanium,chromium,manganese,zirconium called (**strategic metals).**

58. The metal **Uranium** plays vital role in **Nuclear reactions.**

59.**Enormous energy** released in Nuclear reactions -**Nuclear energy**.

60**. Coinage metals**– copper, silver ,gold.

61. Purity of gold is expressed in **Carat.**

62. **Pure gold** is 24 Carat gold.

63. **22 carat gold** contains -22 parts gold+ 2 partscopper (ornaments)

64. **Percentage** of purity calculated as – **22/24 x 100=91.6%**

65. For **making jewels** we use **– 916 gold.**

67. **Vietnameses** uses - **Silver (Ag)** for craft work.

68. **Fe(iron) –** present in **blood pigment**(haemoglobin).

69. **Ca(calcium) –** present in **bone and teeth**.

70. **Co –(cobalt) –** present in **vitamin B_{12} (cyanocobalamin**).

71. **Mg-(magnesium**) present in **chlorophyll.**

72. **Co -**(cobalt) : **CO** (carbon monoxide).

73. Single compound (or) complex mixture of compounds of metals- **Minerals.**

74. In Mineral, metal extracted on large scale – **ore.**

75. Formula for **Clay – Al_2O_3 . $2SiO_2$. $2H_2O$**

76. Formula for **Bauxite – Al_20_3. $2H_2O$**

77. Mineral of Aluminium (Al) –**Clay.**

78.Ore of Aluminium (Al)- **Bauxite** .

79. **Minerals** contains**– Low percentage of metal**.

80**. Ores** contains –**High percentage of metal** .

81. **Metals**– cannot be extracted from Mineral.

82. **Ores** used for - **Extraction of metals**.

83. All minerals cannot be – **ores** ; All ores are – **minerals.**

84. Extracting ores from earth crust –**Mining.**

85**. Metallurgy – various steps**involved and refining of crude metal.

86. **Impurities (**rocky) with ore - **Gangue (or) Matrix.**

87. Substance added to ore to reduce temp.-**Flux** (Negative catalyst).

88. **Fusible product** when flux reacts with gangue –**Slag.**

89. Reducing **roasted oxide to metals** in molten state - **Smelting.**

90. Nearly **80 metals** obtained from –**Surface of the earth**.

91. Metals have**low chem .reactivity** found in**– Free, Native state** .

92. **Gold(Au) , Silver(Ag) , Platinum(Pt)**found in **– Free state**.

93. Also some metals found in **–(O);(Co_3);(X);(S);(SO_4)ores.**

94. **Oxide ores** – Bauxite ; Cuprite (CuO_2); Haematite (Fe_2O_3)

95. **Carbonate ore** – marble ($CaCO_3$);magnesite($MgCO_3$);siderite($FeCo_3$).

96.**Halide ores** – Cryolite (Na_3AlF_6); Fluorspar(CaF_2); rocksalt(Nacl).

97. **Sulphide ores** - Galena (PbS); ironpyrite (FeS_2);zinc blende(ZnS).

98. **Ore can be concent**. by –Gravity separation ; Froth Floatation; Magnetic separation ; Leaching.

99. Metals **of High reactivity** – undergoes **Electrolytic reduction of refining.**

100. Metals of (**moderate**) Slow reactivity - undergoes calcination ; roasting; redn ; refining.

101. Metals **of Low reactivity** – undergoes roasting,redn,refining.

102. **ALUMINIUM** atomic no. 13; Elect. Config. -**2,8,3**; Valency-3; At.mass – 27 : occurs in -(combined state).

103**. First most abundant** metal on earth's crust – **Aluminium** (Al) .

104. **Second most abundant**metal on earth's crust –**Iron(Fe).**

105. **Ores of Aluminium** –Bauxite , Cryolite, Corundum(Al_2O_3)(alumina).

106**. Chief ore of Aluminium** - Bauxite ($Al_2O_3.2H_2O$)

107. **Chief ore of Copper –** Copper Pyrite ($CuFeS_2$)

108. **Chief ore of Iron** - Haematite (Fe_2O_3)

109. Extraction of Aluminium involves two processes **–Baeyer'sprocess and Hall'sprocess**

110. Bauxite+causticsoda forms **- sodium Metaaluminate**

111. On diluting sod.met.aluminate ,we get -**Aluminium hydroxide**

112.In **Bayer's** process ,at **1OOO^oC** we get **–Alumina(Al_2O_3).**

113. **Hall's process** -Electrolytic redn.of fused alumina in electrolytic cell.

114. In H- process **Cathode** is - **Iron tank lined with graphite**.

115. In H- process **Anode** is**- Bunch of graphite in electrolyte**.

116.In H- process **Electrolyte** is **– Pure alumina,cryolite, Fluorspar**

117. **Fluorspar(CaF_2)**-**Lowerstemp.** of Electrolyte in Hall'sprocess .

118**. Temp**. maintained in **Hall's process** -**900 to 950^oC**

119**. Voltage**maintained in**Hall's process** -**5 to 6 volt** .

120**. Over all eqn** for Ext. of **Al – $2Al_2O_3 \rightarrow 4Al+3O_2$** .

121. In **H's process – Al** deposits at **cathode** ;**O_2**liberated at **anode** .

122. **Melting point** of aluminum **– 660^oc** .

123.Aluminium is a **reactive metal** occurs in **combined state** .

124. Aluminum can be **polished** and produce **shiny appearance** .

125. On heating Aluminiumin air at **800ºc** forms - Al_2O_3; AlN .

126. Water has **no reaction** with Aluminium (due to oxide layer)

127.when steam is passed over red hot aluminium –**H_2gas** formed .

128. Al reacts with caustic alkali (NaOH,KOH) forms- **Aluminates**.

129.Al reacts with dil or conc. HCl ,dil.H_2SO_4 liberates- **H_2 gas** .

130.**Al** reacts with **conc.H_2 SO_4** liberates – **sulphur dioxide (SO_2).**

131.Dil or conc.HNO_3 (**nitric acid**) **does not attack** –Aluminium .

132. Aluminium is a **powerful reducing agent** .

133. Mixture of Al powder + iron oxide –**Aluminothermic process .**

134. Mixture of Al powder + ironoxide used for –**Thermite welding**.

135. Thermite welding -**joining** the gapbetween broken pieces of rails.

136.**COPPER**-atomic.no.29,atomic.mass 63.5,valency 1,2 ,electronic config.**2,8,18,1**

137.**copper**-named as **cuprum**by **romans**-available in **cyprus island**.

138.copper-occurs in **both native and combined** state.

139**.ores of cu**-copper pyrite($CuFeS_2$),cuprite or ruby copper(Cu_2O),copper glance(Cu_2S).

140.copper pyrite yields nearly- **76% of world production** of copper.

141.**sulphide ores** are concentrated by-**froth floation process**.

142.**Matte**- mixture of Cu_2S + FeS.

143.Matte is transferred to **Bessemer convertor** for get -**Blister copper**.

144.**slag**(waste)- removed in **Bessemerisation** process using silica(SiO_2).

145.**Blister copper** contains-98%pure copper+2%impurities.

146.pure copper are purified by - **Electrolytic refining**.

147.Electrolytic method used to get –**High degree of purity** metal.

148.In **Elect.refn**.method-**cathode** –thin **plate of pure copper** metal.

149. In **Elect**.refn.method-**Anode-impure copper** metal.

150. In Elect.refn.method-**electrolyte**-**copper sulphate with H_2SO_4**

151.when an **electric current** is passed **thro'electrolytic soln**.-**purecopper** deposit at **cathode**- **impurities** at **anode**.

152.**Anode mud**-during elect.refin.impurities settled at bottom of anode.

153.MELTING POINT OF COPPER-**1356^0C**

154.HEATING copper at different temp.with air forms-**CuO and CU_2O.**

155.Colour of **copper(II)oxide**-CuO-**BLACK i**n colour.

156.Colour of **copper(I)oxide**-Cu_2O-**RED** in colour.

157.Copper reacts with dil.HNO_3(Nitric acid)forms **–NITRIC OXIDE(NO**).

158.In the absence of air **Cu doesnot reacts** with-Dil.HCl and Dil.H_2SO_4.

159.Cu reacts with Con.HNO_3 and Conc.H_2SO_4 forms-**NO_2 and SO_2.**

160. Cu reacts with Chlorine (Cl_2) forms-**Copper(II)chloride($Cucl_2$).**

161.COPPER **does not attacked** by –**ALKALIES**(NaOH,KOH).

162.COPPER is alloyed with Au,Ag to make –**COINS,JEWELS.**

163.Cu used as **– cables,containers,calorimeters,electroplating**.

164.**IRON –** (Fe)Grey colour,At.no-26,At.mass-55.9,Valency-2,3 Elect.config.-**2,8,14,2**

165.**ORES of iron**-HAEMATITE(Fe2O3),MAGNETITE(Fe3O4),IRON PYRITE(FeS2).

166.**OXIDE ORES** are concentrated by-**GRAVITY SEPARATION METHOD**.

167.Concentrated ore of iron is heated in a limited supply of air using-**REVERBERATORY FURNACE.**

168.During Ext.of iron –**CHARGE** consists of roasted ore,coke,limestone in the RATIO **8:4:1**

169.Temp.maintained at**COMBUSTION ZONE**(lower)-**1500^{O}c**.

170. .Temp.maintained at **FUSION ZONE**(middle)-**1000^{O}c**.

171. Temp.maintained at **REDUCTION ZONE**(upper)-**400 ^{o}c**

172.Limestone ($CaCO_3$) decomposes into –CaO +CO_2(**ENDOTHERMIC)**.

173.Calcium oxide reacts with silica to form-**CALCIUM SILICATE** ($CaSio_3$)-SLAG.

174.Molten iron collected at the bottom of **BLAST FURNACE called- PIG IRON.**

175.Pig iron is remeltedand cast into moulds called-**CAST IRON**.

176.**Ore** is heated in **ABSENCE OF AIR** called-**CALCINATION PROCESS**.

177. **Ore** is heated in **PRESENCE OF AIR** called-**ROASTING PROCESS.**

178.IN CALCIN.PROCESS-**carbonate ore is converted (Co_3)into oxide**.

179. IN ROAST.PROCESS-**Sulphide (S) Ore is converted into oxide**.

180.Based on **CARBON CONTENT,IRON** Classified into –**THREE TYPES.**

181.carbon content in **PIG IRON-2 to 4.5%**

182. carbon content in **WROUGHT IRON-< 0.25%**

183. carbon content in **STEEL – 0.25 to 2%**

184.**PUREST** FORM of IRON –**WROUGHT IRON.**

185.**SPECIFIC GRAVITY** of IRON(Fe) -**7.9**

186.IRON can be **MAGNETISED**

187.IRON on heating with air forms-**MAGNETIC OXIDE**(Fe_3O_4) Black in colour.

188.IRON with moist air forms –**Hydrated Ferric oxide called RUST** (Brown in colour).

189.**Formula** for RUST – **$Fe_2O_3.X\ H_2O$**

190.When **steam** is passed over **red hot iron** forms-MAGNETIC OXIDE.

191.IRON reacts with CHLORINE forms – **FERRIC CHLORIDE(**$FeCl_3$).

192.IRON reacts with dil.HCl,dil.H2SO4 –**LIBERATES H_2** GAS.

193.IRON reacts with conc.H2SO4 forms – **Ferric Sulphate –$Fe_2(SO4)_3$**

194.IRON reacts with dil.HNO3 forms – **Ferrous Nitrate –$Fe(NO_3)_2$**

195.IRON reacts with conc.HNO3 forms – **Iron oxide(Fe_3O_4)**;Inert or passive.

196.USES OF PIG IRON- **stoves, radiators,railings,drain pipes.**

197.USES OF STEEL **–buildings,machinery,T.V.towers,making Alloys**.

198.USES OF WROUGHT IRON **– springs,anchor,electromagnets**.

199.ALLOYS are **SOLID solutions**.(homogeneous mixture).

200.**BRASS** – Alloy of ZINC in COPPER.

201.**AMALGAM –** Alloys of MERCURY(Hg) with metals.

202.The only **LIQUID METAL** - **MERCURY(Hg)**

203. The only **LIQUID NON-METAL – BROMINE(Br_2)**

204.Mercury with SILVER(Ag) and TIN(Sn) –**DENTAL FILLING.**

205.**COPPER ALLOYS –**BRASS(Cu,Zn)-medals, hardware.

206. **COPPER ALLOYS-**BRONZE(Cu,Zn,Sn)-statues,bells,gongs.

207.**ALUMINIUM ALLOYS** –Duralumin(Al,Mg,Mn,Cu)-Aircraft,pressure cooker.

208. **ALUMINIUM ALLOYS-** Magnalium(Al,Mg)-Aircraft,scientic instruments.

209.**IRON ALLOYS-**NICKEL STEEL(Fe,C,Ni)-Cables,aircraft parts,propeller.

210. **IRON ALLOYS-**STAINLESS STEEL(Fe,C,Ni,Cr)-cutlery,automobile parts.

211.slow and steady destruction of metals by environment-**CORROSION.**

212.CORROSION –**Simple electro chemical reaction**.

213.In corrosion-**CATHODE**-impure iron surface.

214.In corrosion-**ANODE**-Pure iron.

215.In corrosion- **ELECTROLYTE**-Carbonic acid(H_2CO_3)

216.Moisture and CO2 from air reacts to form-**CARBONIC ACID**

217.**PREVENTING CORROSION**- coating with paints,oil,greases ,alloying metals.

218.**PREVENTING CORROSION**-Galvanization,Electroplating,

Sacrificial protection.

219.Alloyed metal(Stainless steel) is more resistant to –**CORROSION.**

220.coating zinc on iron using electric current -**GALVANIZATION**

221. coating Metal on another metal using electric current-**ELECTROPLATING(**silver plating,nickel plating)

222.**ELECTROPLATING–**enhances the METALLIC APPEARANCE

223.MAGNESIUM(Mg) is **more reactive than** IRON(Fe)

224.All organic compounds belongs to –**GROUP 14.**

225.**Greenish layer** forms on copper vessel –**copper carbonate**.

226.Aluminium powder- **STRONG REDUCING AGENT**.

227.Rusting occurs in iron nail due to –**DISSOLVED OXYGEN**

228.**Charge** introduced into BLAST FURNACE thro'-**CUP AND CONE** at the top.

229.To design the body of **AIRCRAFT** used –**ALUMINIUM ALLOYS**.

230.An example for **Dehydrating Agent- ANHYDROUS CALCIUM CHLORIDE ($CaCl_2$absorbs moisture).**

TWO MARKS;

1.State Modern Periodic law(p-175)

2.Define Atomic number(Z).(175)

3.How Moseley discovered the atomic number?(175)

4.What is a modern periodic table?(176)

5.what are periods and groups?How many periods and groups are there in periodic table?(176)

6.Give any two characteristics(properties) of periods.(177)

7. Give any two characteristics(properties)of groups.(177,179)

8.Write any two Advantages of periodic table(179)

9.Mention any two defects of periodic table (179)

10.**Position of Hydrogen is not fixed till now-why?**

* Hydrogen was placed in Group-I ,although its properties resembled both Group-I and Group-VII.

*So, Mendeleev placed the elements according to their similarities and not in the increasing order of their Atomic masses.

11.What are strategic and coinage metals?Give Eg(181).

12.Write about the metals essential for various biological purposes?(181)

13.The vitality of metals for totality of life-Explain(181)

14.Write about “916” pure gold(181)

15.What are Minerals?Give Eg.(182)

16.Define Ores.Give Eg(182)

17.Differ Minerals and ores(183)

18.What is Mining?(183)

19.Define; Metallurgy(183)

20.Define: Gangue (or) Matrix(183)

21.What is Flux?Give Eg(183)

22.What is Slag? Give Eg(183)

23.Define Smelting process(183)

24.Metals found in free and native state-why?(183)

25.Give some examples for OXIDE ORES with formulae(183)

26.Give some examples for CARBONATE ORES with formulae(183)

27. Give some examples for HALIDE ORES with formulae(183)

28. . Give some examples for SULPHIDE ORES with formulae(183)

29.Draw the flow chart for Ext.of metals from its ore(183)

30.Write the processes used in the concent.of ore(183)

31.Give some ores of ALUMINIUM with formulae(184)

32.What are the two stages involved in Ext.of Al(184)

33.What happens when Bauxite reacts with caustic soda?Give eqn.(184)

34.Write the overall eqn. for ext.of ALUMINIUM(184)

35.Silvery white metal burns in air at 800^0c-Give eqn(185)

36.What happens when steam is passed over red hot Aluminium?Give eqn.(185)

37.Aluminium reacts with alkalies-give eqn.(185)

38.Draw the diagram for ELECTROLYTIC REFIN.of Al with any two parts(185)

39."Al" is a powerful reducing agent-Explain(186)

40.Write about THERMITE WELDING with uses(186)

41.Give any two uses of ALUMINIUM(186)

42.Why copper was called as"CUPRUM"by Romans?(186)

43.Name the ores of copper with formulae(186)

44.How is “MATTE” obtained?(187)

45.What is “BLISTER COPPER”?(187)

46.What is ANODE MUD?(187)

47.Reddish Brown metal on heating forms two types of oxides-Give eqn.(187)

48.COPPER reacts with chlorine-Give eqn.(188)

49.Name the ores of IRON with formulae(188)

50.write the charges introduced in BLAST FURNACE with ratio(188)

51. Name the three types of zone with temp.during the extraction of iron(188,189)

52.What happens when calcium oxide reacts with silica?Give eqn.(189)

53.What is PIG IRON?Give one use(189,190)

54.What is CAST IRON?(189)

55.Define : CALCINATION (189)

56. Define : ROASTING(189)

57.Differ calcination and roasting process(189)

58.Give the CARBON CONTENT in three types of IRON(189)

59.What happens when iron is heated with air?(190)

60.What is RUSTING ?Give eqn.(190)

61.What happens when steam is passed over red hot iron(190)

62.IRON reacts with chlorine-Give eqns.(190)

63. What happens when iron is DIPPED in conc.HNO3?(190)

64.Give some uses of iron(190)

65.What are Alloys ? Give eg(190)

66.Alloys are solid solutions-why?(190)

67.Give any two methods of MAKING ALLOYS(190)

68.What is AMALGAM?Give eg(190)

69.Define: Dental Amalgams?Give its uses(190)

70.Give some COPPER ALLOYS with uses(191)

71. Give some ALUMINIUM ALLOYS with uses(191)

72. Give some IRON ALLOYS with uses(191)

73.Define: CORROSION(191)

74.CORROSION is a simple electro chemical reaction-Explain(191)

75.Draw the diagram for RUSTING OF IRON(191)

76.Give any two methods for preventing corrosion(192)

77.Define : GALVANIZATION (192)

78.What is ELECTROPLATING? Give eg(192)

79.Magnesium is more reactive than iron-why?(192)

80.What is SACRIFICIAL PROTECTION?(192).

13.(CARBON AND ITS COMPOUNDS)

ONE MARKS

1. **Carbon** –symbol C ; At.no 6; At.mass 12 ;Valency 4; **Elect.confi. 2,4** (IV A group); Group 14.
2. CARBON has **four** electrons in the **valence(last) shell**.
3. **Without CARBON** no living things survive on the earth.
4. Human beings are made up of **CARBON COMPOUNDS.**
5. CARBON is a **non-metal**.
6. Carbon occurs in pure form as **DIAMOND and GRAPHITE.**
7. When fuels burns 'C' reacts with O_2 forms **- CO_2**
8. CARBON COMPOUNDS hold key to – **plants and animals.**
9. **CARBON CHEMISTRY** is also called **– LIVING CHEMISTRY**
10. **COMPLEX reactions** done by carbon called –**CARBON CYCLE**.
11. IN 19th century 'C' classified into **ORGANIC** and **INORGANIC**
12. Compounds obtained from **non-living matter –INORGANIC.**
13. Compounds obtained from **Living matter – ORGANIC.**
14. 'C' Classification altered after – **WOHLER SYNTHESIS**
15. A creator of **REVOLUTION** in organic chem.- **FRIEDRICH WOHLER**
16. The word '**ORGANIC**' signifies – **LIFE ON EARTH.**

17.The term '**ORGANIC CHEM**.' was **first** used by – **BERZELIUS**

18.WOHLER used **AMMONIUM CYANATE** (inorganic compound) to obtain-**UREA {NH_2-CO-NH_2}**(organic compound).

19.**VITAL FORCE THEORY** (Theory of life) –**WOHLER**

20.Organic compounds made up of Hydrocarbons –**ORGANIC CHEM.**

21.Most **precious** Diamond – **KOHINOOR DIAMOND** (CRYSTAL)

22.Example for crystalline allotrope of carbon- KOHINOOR DIAMOND

23. KOHINOOR DIAMOND(**pure Diamond)- 105 CARAT**.

24.The weight of KOHINOOR DIAMOND – **21.6 grams**

25. KOHINOOR DIAMOND was seized by –**EAST INDIA COMPANY**

26. Carbon atoms forms **BUILDING BLOCKS** for living organisms.

27. KOHINOOR DIAMOND –may be ordinary coal of **COAL.**

28.CARBON-GROUND STATE of **electronic configuration-**$1S^2 2S^2 2P^2$

29.Carbon atom lose or gain 4electrons to form- **C^{4+}** or **C^{4-}** ions

30.The shape of METHANE (CH_4) is - **TETRAHEDRAL**

31.Elements exists more than one form phy.diff, chem.same called-**ALLOTROPY**

32.'C'exists in 3 allotropic forms –**crystalline,amorphous,fullerene.**

33.Example for Amorphous(powder) carbon – **coke, charcoal.**

34. DIAMOND -**3Dimensional structure,hardness & rigidity.**

35.In graphite, 'C' bonded to - **three carbon atoms**

36.The shape of GRAPHITE is - **HEXAGONAL** .

37.**WEAK VANDER WAALS FORCES** for softness of –GRAPHITE.

38.GRAPHITE is a good conductor due to **– Free electrons.**

39.FULLERENE has – **60 carbon atoms.**

40.The shape of FULLERENE is – **FOOT BALL.**

41.**'F'** - GEODESIC DOME designed by –**BUCKMINSTER FULLERENE**

42.'C'links with 'c' atoms forms large no. of molecules-**catenation.**

43.Carbon compounds shows - **ISOMERISM.**

44.Compds –**same** mol.formula but diff.struct.formula-**isomerism**

45.**C_2H_6O -** ETHYL ALCOHOL(**C_2H_5OH),** DIMETHYL **ETHER (CH_3OCH_3)**

46.'C' compounds have – **LOW melting & boiling points.**

47.'Carbon ' compounds are – **Easily combustible.**

48.carbon compds.are oxidized to form-**Carboxylic acids(R-COOH).**

49.Ex. for OXID.AGENT- **Alkaline potassium permanganate($KMnO_4$)**

50.Unsat.'C' compds.undergoes **–Addition reactions with H_2** .

51.Examples for **CATALYST – Palladium (Pd) , Nickel (Ni).**

52. Carbon compounds undergoes- **Substitution Reactions.**

53.Group or Class of Organic compounds have same structure -"**Homologous series".**

54.Successive compds. In H-series **differs by** - **CH_2 group**.

55.Each member of series differs by a Mol.mass - **14 amu.**

56.'**AMU'** means – ATOMIC MASS UNIT.

57.**Alkanes-(C_nH_{2n+2}), Alkenes(C_nH_{2n}), Alkynes(C_nH_{2n-2}).**

58 .All members of homologous series prep.by-**same general method**

59.Organic compounds contains 'C' & 'H' – **HYDROCARBONS.**

60.PARENT ORGANIC COMPOUNDS called as - **HYDROCARBONS**

61.'H'carbons classified as- **saturated& unsaturated hydrocarbons**

62.**Saturated** hydrocarbons contains **C-C single bond.**

63. **Saturated** hydrocarbons (or) **Alkanes** called – **PARAFFINS.**

64.In Latin, **PARAFFINS** means – **Little Affinity**.

65.Revise the **tabular columns** in – **Page nos. 200 to 203**

66.**Unsaturated** hydrocarbons are called as –**Alkenes,Alkynes**

67. **Alkenes -** double bonds **,Alkynes-** triple bonds.

68. Unsaturated hydrocarbons (or) **Alkenes** called – **OLEFINS**

69.IN GREEK **olefiant** means – ***oil forming***.

70.**Bromine test** –check saturated or unsaturated solution.

71.**Functional group**- reactivepart of characteri. prop.of compounds.

72.**OH-** Alcohol; **CHO**- Aldehyde; **C=O** Ketone; **COOH**-Carboxylic acid.

73.**Alcohols** is also called-**Alkanol**; **Aldehyde** is also called -**Alkanal**;

74.**Ketones** called –**Alkanone**; **carboxylic acid** called-**Alkanoic acid**

75 In DEHYDRATION process Conc.H2SO4 acts as **Dehydrating agent**

76.Most **important member of Alcohol family**- ETHYL ALCOHOL.

77.**MOLASSES**-dark coloured syrupy liquid left after crystallization.

78.MOLASSES contains- **30% of sucrose**.

79.molasses **diluted** with water to – **8 to 10%** concentration of sugar.

80.**Ammonium salts**- Food for yeast during FERMENTATION.

81.If **Nitrogen is poor** in molasses we add –AMMONIUM SALTS.

82.AMMONIUM SALTS contains- **amm. sulphate or amm.phosphate.**

83.In fermentation tanks **the mixture** kept at **303K.**

84.**ENZYMES in yeast** – INVERTASE and ZYMASE.

85.SUCROSE converts into **Glucose** and **fructose.**

86.**$C_{12}H_{22}O_{11}$** –Sucrose ; **$C_6H_{12}O_6$** – Glucose or Fructose.

87.Fermented liquid in Fermentation tanks – **WASH.**

88.In manuf. of alcohol glucose or fructose converts into-**Ethanol,Co_2**

89.**WASH** contains- **15 to 18 %** of Alcohol.

90.**Fractional Distillation** followed in – DISTILLATION OF WASH.

91.**RECTIFIED SPIRIT** – 95.5% ethanol + 4.5% water.

92.RECT.SPT heated under reflux over with **QUICK LIME**(5 to 6 hours)

93.On distillation of rec.spt we get **PURE ALCOHOL(100%)**

94. PURE ALCOHOL(100%) is also called –**ABSOLUTE ALCOHOL**.

95.Slow chemical change in organic compounds form smaller molecules-**FERMENTATION**

96.**ETHANOL** – Colourless liquid – Burning taste.

97.The **BOILING POINT** of ethanol is **351.5 K**

98.ETHANOL –completely **miscible** with water in all proportions.

99.**DEHYDRATION -** Removal of water

100.Dehydration – **INTRA** and **INTER** molecular dehydration

101.**Ethanol** heated with **conc.H_2SO_4 at 443K** –CH_2=CH_2 ethene(intra)

102. Ethanol heated with **conc.H_2SO_4 at 413K** – $C_2H_5OC_2H_5$ (inter)

103.Ethanol mixed with $KMnO_4$ or $K_2Cr_2O_7$- we get **ETHANOIC ACID**

104.Ethanol reacts with **ethanoic acid** form–Ethyl ethanoate + water

105.Alcohol + Carboxylic acid (ethanoic acid) forms –**ESTER.**

106.In esterification process Conc.H_2SO_4 acts as a – **CATALYST**

107.ESTER – A **FRUITY SMELLING** COMPOUND

108.**DEHYDROGENATION** – Removal of Hydrogen.

109.**Ethanol** passed **over copper** at **513K** –**Acetaldehyde**(CH_3CHO)

110.**ETHANOL used in** – Antifreeze in Automob. radiators,digestive syrups, preservative in bio. specimens,Antiseptic,solvent for drugs

111.**METHYLATED SPIRIT** – 95% Ethanol + 5% Methanol.

112.**POWER ALCOHOL** –Mixture of petrol + Ethanol.

113.**DENATURED SPIRIT** –Mixture of Ethanol + pyridine.

114.**ETHANOL consumed** –slow down metabolism, causes central nervous system, Ulcer, high B.P, Cancer, Brain, Liver Damage.

115.Nearly **40% ACCIDENTS** due to **DRUNKEN DRIVE**.

116.Unlike ethanol intake of methanol cause **– DEATH.**

117.**Methanol** CH_3OH is oxidized to – **METHANAL**(HCHO).

118**.METHANAL** causes- LIVER damage and CELLS of our body

119. **METHANAL** causes- PROTOPLASM to get coagulated(like EGG)

120.**METHANOL** causes –**optic** nerves leads to BLINDNESS.

121.ETHANOIC ACID most commonly known as – **ACETIC ACID**.

122.ETHANOIC ACID belongs to group of acids-**CARBOXYLIC ACID**.

123.ACETIC ACID is present in – **MANY FRUITS**.

124.**ETHANOIC ACID** – colourless liquid – **having SOUR TASTE**.

125.ETHANOIC ACID – **miscible** with water in all proportions.

126.The BOILING POINT of ETHANOIC ACID is **391 K.**

127.On **cooling** ethanoic acid frozen into **ICE-LIKE FLAKES**.

128.Ethanoic acid looks **like glaciers** called – **GLACIAL ACETIC ACID**.

129.Ethanoic acid –WEAK ACID- changes **BLUE LITMUS to RED**.

130.Ethanoic acid-liberates $\mathbf{H_2}$ with metals like Na,K,Zn

131Ethanoic acid-liberates $\mathbf{CO_2}$ with carbonates , Bi-carbonates.

132.Ethanoic acid with NaOH forms **sodium ethanoate** and water.

133.**DECARBOXYLATION** – Removal of CO_2.

134.**SODALIME-** 3parts of NaOH +1part of CaO(solid mixture).

135.DECARBOXYLATION of ethanoic acid forms **METHANE(CH_4).**

136.ETHANOIC ACID – used for making **VINEGAR.**

137.VINEGAR used as **preservative in food**,fruit juices.

138.ETHANOIC ACID-**Coagulating RUBBER from** LATEX.

139.**ETHANOIC ACID-prep**.of dyes,perfumes,medicines.

140.CHEMICAL BONDS in organic compounds – **COVALENT BOND**.

141.**DIAMOND-hardest** crystalline form of CARBON.

142.FIRST MEMBER of alkane –**Methane(CH_4)**

143. FIRST MEMBER of alkene –**Ethene($CH_2=CH_2$)-**ETHYLENE

144. FIRST MEMBER of alkyne –**ETHYNE(CH=CH)-**ACETYLENE

145.DENATURATION of ethyl alcohol- **Unfit for drinking purpose**.

146. DENATURATION of ethyl alcohol carried out **by Methyl alcohol**.

147.**ETHANOIC ACID**(Acetic acid)-used as **preservative in PICKLES**

148.Sodalime used in decarboxylation - to remove WATER

149.**FORMIC ACID** is present in **RED ANTS**

150.**TWO COMMERCIAL ORG.COMPDS**.- ethyl alcohol, ethanoic acid

151.The gas turns **LIME WATER into MILKY** – CO_2

TWO MARKS

1.Draw the **ELECTRONIC CONFIGURATION** of CARBON(page no.195)

2.what is **LIVING or CARBON CHEMISTRY**? (195)

3.Define : **CARBON CYCLE** (195)

4.write the **CLASSIFICATION** of CARBON COMPOUNDS(195)

5.How is organic compound created by **WOHLER**?(196)

6.Write about **KOHINOOR DIAMOND**(197)

7.What is **tetravalency** of CARBON ? (197)

8.Explain the **structure of METHANE** with diagram(197)

9.What is **ALLOTROPY**?(198)

10.Write the **ALLOTROPES of CARBON**(198).

11.Explain **structure of DIAMOND**(Diagram is not necessary)(198)

12.**VANDER WAALS forces** for softness in GRAPHITE-Why?(198)

13.Explain about **FULLERENE**(Diagram is not necessary)(198)

14.What is called ' **CATENATION**'? (198)

15.Write about the **STABILITY** of CARBON COMPOUNDS(198)

16.What is **ISOMERISM**?(198)

17.**C_2H_6O** represents two compounds-explain(198)

18.Carbon compounds have **LOW melting and boiling pt**. why(198)

19.How are carbon compounds **forms CARBOXYLIC ACIDS**?(199)

20.Give one **ADDITION reaction** of UNSAT. carbon compds.(199)

21.How is **ethene** (Alkene) converted to **ethane**(Alkane)?(199)

22.What is a **HOMOLOGOUS SERIES**?(199)

23.List out any **two CHARACTERISTICS** of Homologous series(199)

24.Write any two **importance of HOMOLOGOUS** SERIES(200)

25.What are **HYDROCARBONS ?** How are they classified?(200)

26.What are **PARRAFINS ?**Write the GENERAL FORMULA(200)

27. What are **OLEFINS ?**Write the GENERAL FORMULA(200)

28.Write the **IDENTIFICATION** TEST for HYDRO CARBONS(200)

BROMINE TEST: Bromine is **added** to the given solution.

(a)If the solution,has **no change** in colour it is **SATURATED.**

(b) If the solution is **decolourised**(changes) it is **UNSATURATED.**

29.What are **FUNCTIONAL GROUPS** ?Give egs(201).

30.Give examples for some functional groups?(201).

31.Give the **COMMON NAME and IUPAC NAME**(200 to 203)

32.Give some examples **for ORGANIC COMPOUNDS**(203)

33.What is **MOLASSES ?** What does it contains?(204)

34.How is **SUCROSE** converted into **ETHANOL**?Give equations(204).

35.If **N_2 content is poor** in molasses –What happens?(204).

36.What is **ABSOLUTE** or **PURE ALCOHOL**?(204).

37.What is **FERMENTATION** ? Give example(205).

38.What are the two **types of DEHYDRATION** ?Give eg's(205).

39.What is **INTRA MOLECULAR DEHYDRATION**?Give eg(205)

40. What is **INTER MOLECULAR DEHYDRATION**?Give eg(205)

41.What happens when **ETHANOL reacts with sodium**?(205).

42.Give the **OXIDATION PROPERTY** of ETHANOL.(205).

43.Write the **IDENTIFICATION TEST for ALCOHOLS**(205,206)

Ethanol is oxidized to Ethanoic acid in the presence of **potassium di chromate,($K_2Cr_2O_7$)** . During this reaction **ORANGE** colour of $K_2Cr_2O_7$ changes into **GREEN.** This confirms that the given solution is ALCOHOL.

44.Define : **ESTERIFICATION PROCESS** with equation(206).

45.Write the **DEHYDROGENATION PROPERTY** of ETHANOL(206)

46. Give the **uses of ETHANOL**(ANY TWO) (206)

47.Write any two **EVIL EFFECTS** of consuming ALCOHOL.(206)

48.**Unlike ethanol**,intake of methanol cause DEATH-Why?(207)

Because **Methanol(CH_3OH)** is oxidized to **Methanal(HCHO)**

in the Liver and reacts fastly with Components of cells in our body.

49.What is **GLACIAL ACETIC ACID**?(207)

50.What happens when Ethanoic acid reacts with **carb,Bicarb.** (208)

51.What happens when Ethanoic acid reacts **with Base(NaOH)** (208)

52.What is **DECARBOXYLATION**?Give eqns.(208)

53.Give any two **uses of ETHANOIC ACID**(Acetic acid) (208)

54.How will u prepare **ETHANOIC ACID from ETHANOL**?(207)

55.Write the **steps involved** in manuf.of ethanol from molasses(204)

FIVE MARKS

1.What is **ALLOTROPY?**Explain allot. of carbon(no diag.)(198)

2.Give the (Props.)**Physical nature of carbon** and its compds.(199)

3. Give the **Chemical Properties of carbon** and its compds.(199)

4.What is **HOMOLOGOUS SERIES**?List out **its characteristics**(199)

5.What are **HYDROCARBONS**? Explain its **types** (200,201)

6.How is **ETHANOL manufactured** from **SUGAR MOLASSES**(204)

7.Give any FIVE **CHEMICAL PROPERTIES OF ETHANOL**(205)

8.Explain the **processes** (i)Esterification (ii)Decarboxylation(206,208)

9.Mention the **USES of ETHANOL**(206)

10.Explain the **EVIL EFFECTS** of consuming more **ALCOHOL(**206)

11.What is **Dehydration**? Explain its **Types(205**)

12.Give the **CHEMICAL PROPERTIES of ETHANOIC** ACID(207,208)

13.Mention **some uses of ETHANOIC ACID** (208)

14.Revise all the **TABULAR COLUMN** in page nos.(**200 to 203)**

15.An organic compound **(A)** is heated with excess **Conc.H_2SO_4** at

443 K to form the product **(B)** with water.

(a) Identify the compounds **(A), (B).**

(b)Name the **Process** involved in the above reaction.

(c) Write the **Chemical Equation** for above reaction.

(d)Mention the **role of Conc.H2SO4**

(e) Give one **use of (A)** and its **IUPAC** Name.

16. An organic compound **(A)** is heated with excess **Conc.H_2SO_4** at

413 K to form the **product (B)** with water.

(a).Identify **(A) ,(B)**

(b)Name the **process** involved in the above reaction.

(c)Write the corresponding **equation.**

(d)Which is called as "**'King of chemicals**"?

(e)Write the **FUNCTIONAL GROUP of (B).**

17.An organic compound **(A)** is used as a preservative in pickles, reacts with Ethanol to form the product**(B).**

(a)Identify **(A), (B)** (b) Name the **process** involved in the above reaction.

(c)Write the corresponding **equation.**

(d) Mention the **role of Conc.H2SO4**

(e)Name the **odour** of the product **(B).**

(f)What is the product **(B),** otherwise called?

18.When sodium salt of an organic compound **(A)** is heated with soda lime to form the product **(B).**

(a) Identify **(A), (B)**

(b) Name the **process** involved in the above reaction.

(c) What is **soda lime**?

(d) Give one **use of (A).**

(e)Mention the **IUPAC name** of the product **(B)**

(f) Write the corresponding **equation.**

MEMORY WELL ; SCORE WELL

CHEMISTRY

ONE MARKS - READ ALL THE LN'S EXCEPT LN-10

TWO MARKS - ALL LN'S (9 TO 13) **PROBLEMS -** LN'S (9,10,11)

FIVE MARKS - LN'S 10 (OR) 13

- **PREPARED FOR THE BETTERMENT OF ALL CHILDREN**

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