VIVEKANANDA VIDYALAYA MATRIC.HR.SEC.SCHOOL
MADURANTAKAM
XI CHEMISTRY UNIT WISE QUESTIONS

UNIT - 1

2 Marks:

1. What do you understand by the term mole? (6)
2. Distinguish between oxidation and reduction.
3. What is limiting reagent. (17)
4. Define gram equivalent mass. (9)
5. Calculate the amount of water produced by the combustion of 32g of methane. (15)
6. Calculate the number of moles present in 9g of ethane. (Ey)
7. Define Avogadro number. (7)
8. Uses of gastric acid and antacid (6)
9. Define molar volume and molar mass. (8)
10. How will you find out the gram equient mass of acid?
11. What is the empirical formula of the following:
    i) $C_6H_{12}O_6$ ii) $C_8H_{10}N_4O_2$ and BB

3 Marks

12. Differentiate empirical and molecular formula.(10)
13. Calculate the oxidation state of the underlined elements in the following compounds (21) i) $\underline{S}O_2$ ii) $H_2\underline{S}O_4$ iii) $\underline{C}O_2$
14. BB – 42, 43

5 Marks

15. Define oxidation and reduction based on electronic concept.
16. The balanced equation for a reaction is given below.

    $2x + 34 \rightarrow 4l + m$

    When 8 moles of x react with 15 moles of y.then

    1. Which is the limiting agent.
    2. Calculate amount of product formed.
    3. Calculate the amount of excess reactant left at the end of the reaction.

UNIT – 2

2 Marks

17. Define Hund's rule. (53)
18. Limitation of Bohr atom model. (40)
19. Write the expected configuration for chromium – 24 (55)
20. Half filled and completely filled orbital's have greater stability than prove it, other partially filled configuration.

3 Marks

21. State Heisenbreg's uncertainty principle. (42)
22. Explain azimuthal quantum number. (44)
23. Explain principle quantum number. (44)
24. State de Broglie concept. (41)
25. How many orbitals are possible for n = 4?
26. Define orbital? What are the n and l values for $3P_x$ and $4d_x^2 - y^2$ electron? (32)
27. How many radial nodes for 2s, 4p, 5d and 4f orbitals exhibits? How many angular nodes? (28)

28. For each of the following, give the sub level designation, the allowable m values and the number of orbitals.
    i) n = 4, *l* =2, ii) n = 5, *l* = 3 iii) n=7, *l* = 0 (BB-38)
29. Give the electronic configuration of Mn^{2+} and Cr^{3+} (BB-39)

5 Marks

30. Explain Aufbau principle and Pauli excutsion principle (52)
31. Explain Bohr atom model. (39)

UNIT – 3

2 Marks and 3 Marks

32. State modern periodic law. (73)
33. Define atomic radius. (79)
34. Define covalent radius (79)
35. What is effective nuclear charge (80)
36. Define lonisation energy. (84)
37. Define electron affinity (86)
38. What is diagonal relationship (90)
39. Mension the anomalous properties of second period elements (89)
40. Give the electronic configuration of lanthanides and actinides. (78)
41. Explain the Pauling method for the determination of lonic radius (BB-39)
42. State the trend, in the variation of electnegativity in groups and periods. (BB-47)

UNIT – 4 HYDROGEN

2 Marks & 3 Marks

43. What are isotopes? Write the names of isotopes of hydrogen (BB32)
44. What are Ortho and para hydrogen? (102)
45. Justify the position of hydrogen in the periodic table (BB 31)
46. Give the uses of heavy water. (33, 111)
47. Discuss the three types o covalent hydrides (23)
48. How is tritium prepared? (104)
49. Explain the deuterium exchange reactions (105)
50. How can we remove the temporary hardness of water through Clark's method? (109)
51. Why interstitial hydrides have low density than patent metal (113)
52. Give the uses of heavy water.

5 Marks

53. What is heavy water and explain the properties. (110)

Unit-5

2 Marks & 3 Marks

54. Substantiate lithium fluoride has the lowest solubility among group one metal fluorides (32)
55. How is plaster of Paris prepared? (40, 147)
56. Mention the uses of plaster of Paris. (33, 148)
57. Beryllium halides are covalent where as magnesium halides are lonic why? (143, 34)
58. Write the uses of the followings: i) beryllium ii) magnesium
59. Discuss briefly the similarities between Be and Al.

UNIT – 6

2 Marks & 3 Marks

60. State Boyle's law (160)
61. State Charles law (162)
62. State Gay – Lassac's law. (164)
63. State Avagadro's hypothesis. (165)
64. State Dalton's law of partial pressure (166)
65. Distinguish between diffusion and effusion.
66. Graham's law of diffusion. (168)
67. A sample of gas has a volume of 8.5 dm^3 at on unknown temperature. When the sample is submerged in ice water o 0^oC, its initial temperature? (45)
68. Of two samples nitrogen gas, sample a contains 1.5 moles of nitrogen in vessel of volume of 6.37 dm^3. What is its initial temperature? (45)
69. Of two samples nitrogen gas, sample a contains 1.5 moles of nitrogen in a vessel of volume o 37.6dm^3 of 298k, and the sample B is in a vessel of volume 16.5 dm^3 at 298k. calculate the number of moles in sample (46).
70. Write the application of Dalton's law. (167)
71. Derive ideal gas equation.

5 Marks

72. A tank contains a mixture of 52.5g of oxygen and 65.1g of Co_2 at 300k the total pressure in the tanks is 9.21 atm. Calculate the partial pressure (in atm) of each gas in the mixture.

UNIT – 7

2 & 3 Marks

73. Differentiate extensive and intensive properties. (189)
74. What are state and path functions? Give a example for each. (190)
75. What is zeroth law of thermodynamics. (195)
76. First law of thermodynamics. 195
77. Define standard heat of formation. 198
78. Define heat of combustion. 200
79. Define Hess's law of constant heat summation. 207
80. What is lattice energy? 208
81. Define entropy. 210
82. Define adiabatic process. 190
83. What is spontaneous reaction and conditions. 213
84. Define Isothermal process. 190
85. Problem 7.3 – 202 problem 7.7
86. Problem 7.1 – 196 15, Define Gibb's free energy.
87. Third law of thermodynamics.

5 Marks

88. List the characteristics of internal energy.
89. Write a short note on. I) ISO baric ii) isochoric, cyclic process.

UNIT – 8

2 & 3 Marks

90. State law of mass action. (5)
91. Define equilibrium constant (6)
92. State dynamic equilibrium (5)
93. Justify the equilibrium constants for heterogeneous equilibrium (8)
94. Application of equilibrium constant (10)
95. Define reaction quotient (11)

96. One mole of H_2 and one mole of I_2 are allowed to attain equilibrium in 1 lit container. If the equilibrium mixture contains 0.4 mole of HI. Calculate the equilibrium constant. (13)
97. Explain le-chatelier's principle. (16)
98. Write the effects catalyst (when synthesis of ammonia (NH_3) Haber's process.

5 Marks

99. Derive the relation between Kp and Kc.
100. Derive a general expression for the equilibrium constant Kp and Kc for the reaction.

$$3H_2(g) + N_2(g) \rightleftharpoons 2NH_3(g)$$

101. Deduce the vant Hoff equation.

VOL – 2 UNIT–9

2 & 3 Marks

102. What is relative lowering of vapour pressure.
103. State Raoult's law.
104. What is Henry's law.
105. What is elevation of boiling point. 51
106. What is osmosis? (55)
107. Define ideal and non-ideal soductions.
108. Calculate the molar mass of unknown solution. (53)
109. Isotonic solutions (56)
110. Eg. Problem – 3 (51)
111. Define i) molality ii) Normality (32)
112. What are the advantages of using standard solution?
113. Explain the effect of pressure on the solubility (39)

5 Marks

114. State and explain Henry's law. (38)
115. Write the salient features of VB theory.

UNIT-10

2 & 3 Marks

116. Define bond order.
117. What is hybridization?
118. What is σ bonds? 69
119. Draw the Lewis dot structure for i) ammonia ii) methane -71
120. Define reaction quotient.
121. State Le-chatelier principle.
122. Mension the three types for exception to the octet rule. (73)
123. VBT and salient features of VB theory. (85, 86)
124. Salient features of MOT 97.
125. Draw MO diagram for H_2 molecule. (99)
126. What is dipole moment. (39)
127. Which bond is stronger σ or π? Why?
128. Bond energy. (44)
129. Draw MO diagram for CO and calculate its bond order (36)
130. Describe fajan's rule octet rule. (69)

5 Marks

131. Explain VSEPR theory. Applying this theory to predict the shape's of IF_7 and SF6. (81)
132. Explain the followings a) bond length b) bond order c) bond angle (76)
133. Salient features of MOT. (97)

UNIT–11

2 & 3 Marks

134. What is functional group? Identify the functional group in the following compounds.
   a) acetaldehyde (CH_3CHO) – CHO
   b) Oxalic acid COOH – COOH
   c) Dimethyl ethex CH_3-O-CH_3
   d) Methylamine CH_3-NH_3
135. Give the principle involved in the estimation of halogen in an organic compound by carious method (3m) 141.
136. Functional isomerism and geometrical isomerism 133
137. Explain Mesmerism with suitable examples.
138. Describe organic compound classification. 112
139. What is meant by homologes series? Give examples. 112
140. Write characteristics of organic compounds. 111
141. Explain and metamerism.
142. Explain the term:
   i) Constitutional isomers. 132
   ii) Optical isomerism. 137
143. IUPAC names and structures. 128,129
144. Explain geometrical isomerism (135)
145. Explain the types of Isomerism (133)
146. What are chromatography explain the following chromatography
   i) column chromatography, ii) paper chromatography (152)

UNIT-12

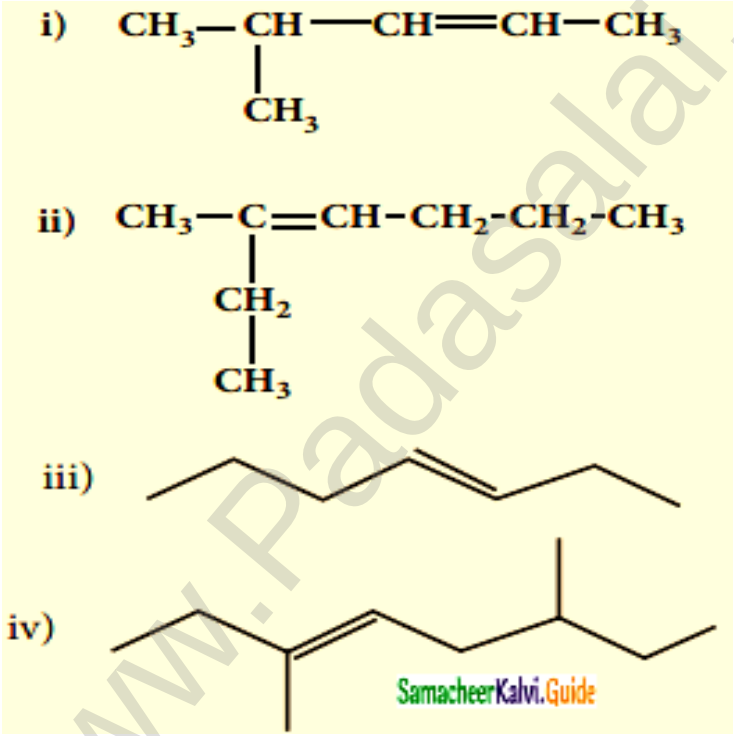
147. What are eleotrophiles? Give two examples.
148. What are mesometic effect (or) resonance effect? (168)
149. Explain electrometric effect. 167
150. What are electophile give 2 examples? 164
151. Write a short note on oxidation and reduction reaction-173
152. Write a short note on positive and negative mesomeric effect 169.
153. What is meant by hemolytic and heterolysis cleavage -162
154. Hyper conjugation – 170
155. No bond resonance or baker Nathan effect -170

UNIT–13

156. Kolbe's electrolytic method. 184
157. Wurtz reaction. 184
158. Plastics code and symbol. 199
159. Write a short note on
    i) Friedel craft's alkylation (Methylation)
    ii) Friedlel craft's: Acylation (212)
160. Define electrophonic substitution reaction. 212
161. Williamson ether synthesis 239
162. Uses of haloalkahes 238
163. Explain halogenations mechanism.
164. What happens when ethylene is passed through cold dil alkane $KMNO_4$? 198
165. What is Ozonolysis. 198
166. Explain poymersation with a example. 199
167. Mention the uses of Alkenes. 199
168. Explain Huckel's rule. 205
169. Explain the following reactions.

i) Wurtz – Fittig reaction. ii) Friedel craft's reaction.

170. Give example for mesmeric effect (+), (-). 168
171. Write a short note on newman projection formula of ethane. 187
172. Define pyrolysis 189
173. Explain corey-house mechanism.
174. Markonikoff's rule -194
175. Structure of benzene – 207
176. What is BHC? 215
177. Birch reduction. 215
178. Write the IUPAC names for the following alkenes.



UNIT-14

179. Structure of Benzene. 207
180. Give the IUPAC name of the compound. (229)

$CH_2 – CH – CH_2 CH_3$

Br Cl Cl

181. Finkelstein reaction -231
182. William son other synthesis -234

183. Differentiate SN_1 and SN_2 mechanism. 235
184. Differentiate E_1 and E_2 mechanism (237)
185. Uses of Haloalkanes
    i) Chloroform ($CHCl_3$) ii) Iodoform
    iii) Carbon tetra chloride (239)
186. Sandmeyer reaction 242
187. Raschig process 242.
188. a) Wurtz fittig reaction. b) Fittig reaction 244
189. Uses of chlorobenzene (over view) 244.
190. How the chloropicrin prepared from chloroform? 248
191. BB. 27,29,32,33,39,44,48,49,50,52,54
192. Dow's process – 248
193. Carbylamines reaction – 248

Unit – 15

194. What is green chemistry BB – 25
195. What are degradable and non-degradable pollutants? 22
196. BB 27, 33, 34

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