SOLUTIONS (AIEEE)

76.	**(3)**	77.	**(4)**	78.	**(3)**	79.	**(1)**
80.	**(3)**	81.	**(1)**	82.	**(2)**	83.	**(4)**
84.	**(3)**	85.	**(4)**	86.	**(3)**	87.	**(2)**
88.	**(3)**	89.	**(2)**	90.	**(1)**	91.	**(2)**
92.	**(3)**	93.	**(2)**	94.	**(4)**	95.	**(3)**
96.	**(2)**	97.	**(4)**	98.	**(2)**	99.	**(4)**
100.	**(1)**	101.	**(4)**	102.	**(1)**	103.	**(2)**
104.	**(1)**	105.	**(4)**	106.	**(2)**	107.	**(3)**
108.	**(2)**	109.	**(3)**	110.	**(2)**	111.	**(1)**
112.	**(3)**	113.	**(1)**	114.	**(2)**	115.	**(3)**
116.	**(3)**	117.	**(1)**	118.	**(4)**	119.	**(4)**
120.	**(1)**	121.	**(4)**	122.	**(3)**	123.	**(1)**
124.	**(2)**	125.	**(1)**	126.	**(3)**	127.	**(2)**
128.	**(1)**	129.	**(4)**	130.	**(3)**	131.	**(1)**
132.	**(3)**	133.	**(2)**	134.	**(2)**	135.	**(3)**
136.	**(4)**	137.	**(1)**	138.	**(3)**	139.	**(2)**
140.	**(2)**	141.	**(1)**	142.	**(4)**	143.	**(1)**
144.	**(3)**	145.	**(2)**	146.	**(4)**	147.	**(3)**
148.	**(1)**	149.	**(4)**	150.	**(3)**		

SOLUTION

76. $4f \longrightarrow n = 4$
$l = 3$
$m = -l$ to $+ l$
-3 to $+3$

77. $24 \longrightarrow 1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^5$
$l = 1 \rightarrow p \longrightarrow 12$
$l = 2 \rightarrow d \longrightarrow 5$

78. Li^+ F^- O^{-2} B^{+3}

e	2	10	10	2
p	3	9	8	5

79. $\frac{1}{\lambda} = R\left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right]$

$= 1.097 \times 10^7 \left(\frac{1}{1}\right)$

$\lambda = \frac{1}{1.097} \times 10^{-7} m$

80. $H_2S \longrightarrow sp^3$
$NH_3 \longrightarrow sp^3$
$BF_3 \longrightarrow sp^2$
$SiH_4 \longrightarrow sp^3$

82. Al, Si, P, S acidity of oxides increases

83. Bond order of NO = 2.5
Bond order of NO^+ = 3
Higher the bond order shorter is the bond length

84. $O^{-1}(g) + e \longrightarrow O^{-2}(g)$
Due to the electronic repulsion, amount of the energy is needed to add electron

86. Total no of valence electrons
$= 3+7\times4+1 = 32$
Total No of hybrid orbital = 4
$\because$ Hybridisation = sp^3

88. $\frac{E_1}{E_2} = \frac{T_1}{T_2}$

$\frac{E_1}{E_2} = \frac{293}{313}$

$\because$ factor = $\frac{313}{293}$

89. sp^3d^2 hybridisation confirms to octahedral or square bipyramidal configuration
$\therefore$ all the bond angles are 90° in the structure

90. Von't Hoffs factor (i) for Na_2SO_4 is maximum i.e. 3(maximum no of particles)
$Na_2SO_4 \longrightarrow 2Na^+ + SO_4^{--}$

92. In Vander Waals equation 'b' is the excluded volume i.e. the volume occupied by the molecules

93. $\because 6.02\times10^{+20}$ molecules of urea is present in $= \frac{0.0001\times1000}{100} = 0.01M$

95. No. of gm equivalents of phosphorous acid
= No. of gm equivalents of KOH
$20\times0.1\times2$ (n = factor) $= 0.1 \times V$
$= 0.1 \times V$

$V = \frac{4}{0.1} = 40\,ml$

96. ∵ the molecular weight of C_2H_5OH & CH_3OCH_3 are same so in its vapour phase at same temperature & pressure the densities will be same

97. Benzene in methanol breaks the H – bonding of the alcohol making its boiling point decrease & there by its vapour pressure increases leading two +ve deviation.

100. Work done = $-P(\Delta V)$
$= -1\times10^5\,[10^{-2} - 10^{-3}] = -900\ J$

102. $t_{1/2}$ = 15 minutes
∴ No. of half lives s =2
(∴ for change of 0.1 to 0.025)
is 30 minutes

103. Applying law of mass action

104. $Kp = Kc\,(RT)^{\Delta n}$

105. As per property of equilibria reverse the equation & divide it by 2

107. $E_{cell} = E^\circ_{RHS} - E^\circ_{LHS}$
$= (0.77) - (-0.14)$
$= 0.91\ V$

108. $Ksp = 108s^5$
$1\times4^4\times s^{1+4} = 256\ s^5 = Ksp$

109. $\therefore \log K_{eq} = \frac{nE^\circ}{0.0591} = \frac{1\times0.591}{0.0591}$
$\Rightarrow K_{eq} = 10^{10}$

110. $C + O_2 \longrightarrow CO_2$ $\quad \Delta H = -393.5\ kJ$
$2CO + ½\ O_2 \longrightarrow 2CO_2$ $\quad \Delta H = -283\ kJ$
$2C + O_2 \longrightarrow 2CO$ $\quad \Delta H = -110\ kJ$

111. $\Lambda^\circ_{NaCl} = \lambda^\circ_{Na} + \lambda^\circ_{Cl} = 126$ … (1)
$\Lambda^\circ_{KBr} = \lambda^\circ_{K^+} + \lambda^\circ_{Br^-} = 152$ … (2)
$\Lambda^\circ_{KCl} = \lambda^\circ_{K^+} + \lambda^\circ_{Cl^-} = 150$ … (3)
$\Lambda^\circ_{NaBr} = \lambda^\circ_{Na} + \lambda^\circ_{Br^-}$
$\Lambda^\circ_{NaBr} = 126 + 152 - 150 = 128$

115. $Mg_3N_2 + 6H_2O \longrightarrow 3Mg(OH)_2 + 2NH_3$

117. ∵ Be & Al have diagonal relationship & so possess similar properties but Be cannot form polymeric hydrides

120. ∵ oxidation of potential of Cr is least & so it changes easily from +2 to +3 state

121. $2\,CuSO_4 + 4KI\ (excess) \longrightarrow 2K_2SO_4 + Cu_2I_2 + I_2\uparrow$

$Na_2S_2O_3 + I_2 \longrightarrow Na_2S_4O_6 + 2NaI$

124. sp^3d^2 $\therefore$ outer orbital octahedral complex

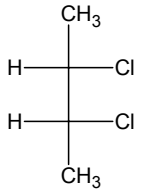
125. Chlorophyll contains magnesium instead of calcium

126. Oxidation potential of Ce(IV) in aqueous solution is supposed to be –ve i.e. -0.784 V at 25°C

130. $2^6 = \frac{200}{a - x}$

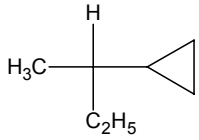
$(a - x) = 3.125$ gm

135. It is having only sp^3 & sp hybridized carbon atom

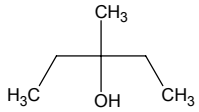
136. 

plane symmetry

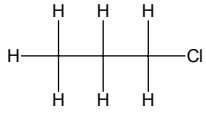
137. Rate of reaction will be fastest when Z is Cl because it is a weakest base

138. 

146. Benzaldehyde does not contain α - hydrogen. Hence goes for cannizarro's reaction forming alcohol and acid

147. 

Tertiory alcohols will undergo more easily dehydration than secondary & primary

148. 

No. chiral centre
Hence not chiral compound

149. Insulin