

Facitliste

1. runde november 2005

- 1-a $\text{CHCl}_2\text{COOH} + \text{H}_2\text{O} \leftrightarrow \text{CHCl}_2\text{COO}^- + \text{H}_3\text{O}^+$
- 1-b $[\text{H}_3\text{O}^+] = 0,0500 \text{ M}$ og $\text{pH} = 1,30$
- 1-c $\alpha = 50 \%$
- 1-d $K = K_S (\text{CHCl}_2\text{COOH}) / K_S (\text{CH}_3\text{COOH}) = 2,8 \cdot 10^3$
- 1-e $\text{pH} = 9,23$ og $\text{pH} = 4,76$
- 1-f Chlor er elektronegativ end hydrogen.
- 2-a $3 \text{ Cu} + 2 \text{ NO}_3^- + 8 \text{ H}^+ \rightarrow 3 \text{ Cu}^{2+} + 2 \text{ NO} + 4 \text{ H}_2\text{O}$
- 2-b $m_{\text{Cu}} = 1,37 \text{ g} \Rightarrow n_{\text{Cu}} = 0,0216 \text{ mol}$. $m(\text{CuO}_x) = 1,72 \text{ g} \Rightarrow M(\text{CuO}_x) = 1,72 / 0,0216 = 79,8 \text{ CuO}$; altså CuO.
- 2-c $m = 0,205 \text{ g}$ $n = 0,00472 \text{ mol} \Rightarrow M = 43,5 \text{ g / mol}$
- 2-d $(1,00 - x) \cdot 46 + x \cdot 32 = 43,45 \Rightarrow x = 0,179 \Rightarrow \text{forhold} = 0,821 / 0,179 = 4,59$
- 3-a $c = \sqrt{K_o} = 9,4 \cdot 10^{-5} \text{ M}$
- 3-b $K = [\text{Ca}^{2+}] \cdot [\text{HCO}_3^-]^2 / [\text{CO}_2]$
- 3-c $[\text{Ca}^{2+}] = 0,00896 \text{ M}$ og $[\text{HCO}_3^-] = 0,01792 \text{ M}$
- 4-a Cyklobutan (E), methylcyklopropan(F), but-1-en (A), methylpropen (D), cis-but-2-en (B/C) og trans-but-2-en (B/C)
- 4-b
- 4-c A: 1,2-dibrombutan B/C: 2,3-dibrombutan D: 1,2-dibrommethylpropan
(et asym. C) (to asym. C)
- 5-a $M = 0,1328 / 0,00225 = 59,0$ pr. COOH gruppe dvs. $M_C = 118 \text{ g / mol}$
- 5-b $\text{C}_4\text{H}_6\text{O}_4$
- 5-c A: hexa-1,5-dien B: hexan C: butandisyre
- 6-a $e^\theta = -336 \text{ mV}$
- 6-b $[\text{M}^+] = 2,6 \text{ M}$ $U_0 = (340 - 20,6) - (-336 + 24,5) = 630,9 \text{ mV}$
- 6-c $[\text{M}^+] = 1,3 \text{ M}$ $[\text{Cu}^{2+}] = 0,1 \text{ M}$
 $U_0 = (340 - 29,5) - (-336 + 6,7) = 639,8 \text{ mV}$
- 7-a $\text{C}_6\text{H}_8\text{O}$
- 7-b $\text{C}_{12}\text{H}_{16}\text{O}_2$ $M_A = (\text{aflæst}) 192 \text{ g / mol}$
- 7-c Over 3000: sp^2 , lige under 3000: sp^3 , 1750: carbonyl (*samt 1250 og 1150: ester*).
- 7-d DBE = $12 - \frac{1}{2} \cdot 16 + 1 = 5$. (Symmetrisk) substi. benzenring (7,3), dublet (3,6), singlet (3,3) multiplet (2,0) og dublet (0,9)
 $\Phi\text{-CH}_2\text{-(C=O)-O-CH}_2\text{-CH(CH}_3)_2$