CHM 1001 General Chemistry

Assignment Answers

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Part 1: Multiple-choice questions

Question No.	Answers
1	E
2	B
3	C
4	~~B~~ D
5	~~B~~ A
6	C
7	D
8	~~B~~ E
9	~~B~~ C
10	D
11	C
12	E
13	D
14	B
15	D
16	A
17	A
18	C
19	C
20	E
Grades	

Part 2: Short answer questions (You can add pages if needed)

1. $m_1 C_1 \Delta T_1 = m_2 \cdot C_2 \cdot \Delta T_2$

$250 \quad 4,184 \cdot (78 - 76,9) = m \quad (0,129)(76,9 - 2,30)$

$m = \frac{1150,6}{9,6234}$ gr

$= 119,56$ gr

2. a. to keep $[H^+]$ stable (i.e. resist the change of pH)

b. salt ~~will~~ will dissociate to ions (~~the~~ countering the strong base)

c. $F^-_{(aq)} + H_3O^+_{(aq)} \rightleftharpoons HF_{(aq)} + H_2O_{(l)}$ (the addition of F^- with acids will increase $[HF]$ and therefore there's a slight decrease on pH)

d $HF_{(aq)} + OH^-_{(aq)} \rightleftharpoons F^-_{(aq)} + H_2O_{(l)}$ (the addition of HF with bases will increase $[F^-]$ and therefore there's a slight increase on pH)

3. STP:

↳ T = 273°K

↳ P = 1 atm

Standard state:

↳ T = mostly 298°K

↳ P = 1 atm

4a. $Ca_3(PO_4)_2 \rightleftharpoons 3\,Ca^{2+} + 2\,PO_4^{3-}$

s → 3s → 2s

$K_{sp} = (3s)^3 (2s)^2$

$2.0 \times 10^{-33} = 108\, s^5$

$s = 1.13 \times 10^{-7}\ M$

b. $s \times Mm = \frac{1.13 \times 10^{-7}}{1} \cdot 100 \cdot \frac{10^{-3}}{1} \cdot 310 \quad g/100\,g \text{ solvent}$

$= 3.503 \times 10^{-6} \quad g/100\,g \text{ solvent}$

5. $K = e^{-\frac{\Delta G}{RT}}$

$= e^{-\frac{(-166.27 + 50.75) \cdot 1000\ J/mol}{9.314 \quad 298}}$

$= 1.78 \cdot 10^{26}$