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Time: 12'	Chem 205 Drop Quiz 1	Friday, March 2, 2012 H. Deeb

Name: ___

1. Write T (True) or F (False) for each of the following True or False statements:

- ___T___ Put your belongings/bags inside the laboratory room on the floor near the entrance door before you move to your bench.
- ___T___ When a concentrated acid has to be diluted, you pour the acid over water, not the water over the acid.
- ___F___ Sniff a certain chemical in order to record its odor.
- ___F___ A buret is calibrated TC at 20 °C
- ___T___ In today's experiment blank titration is done to correct for possible acids other than the acid being titrated.
- ___T___ NaOH is not a good primary standard

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2. Perform the following mathematical operation and report the answer to the proper number of significant figures.

$(5.14 + 82.3) \times (0.024 + 3.000) =$ ___264___

$= (87.4) \times (3.024)$

$= 264$

2

3. An acid – base indicator has a dissociation constant $K_a = 5.36 \times 10^{-5}$. The color of the acid form is yellow and the color of the base form is red.

a) Calculate the pH range for the color change of this indicator.

$pH = pka \pm 1$

$pka = -\log ka = 4.27$

pH range: 3.27 – 5.27

2

b) A drop of this indicator is placed in a solution of pH = 5.96. What will be the color acquired by the solution? **(Show your justification)**

pH = 5.96 is an acidic pH ⇒ the color would be yellow

$pH = 5.96 < 7 \Rightarrow$ acidic medium

4. How many grams of $KMnO_4$ are required to prepare 750.0 mL of a 0.125 M solution? (Atomic weights: K = 39.0, O = 16.00, Mn = 54.94). m = 14.798 g

soln: M = 0.125, V = 750.0 mL

$KMnO_4$: m = ??

$n = M \times V = 0.125 \times 750.0 \times 10^{-3} = 0.0937$ mol

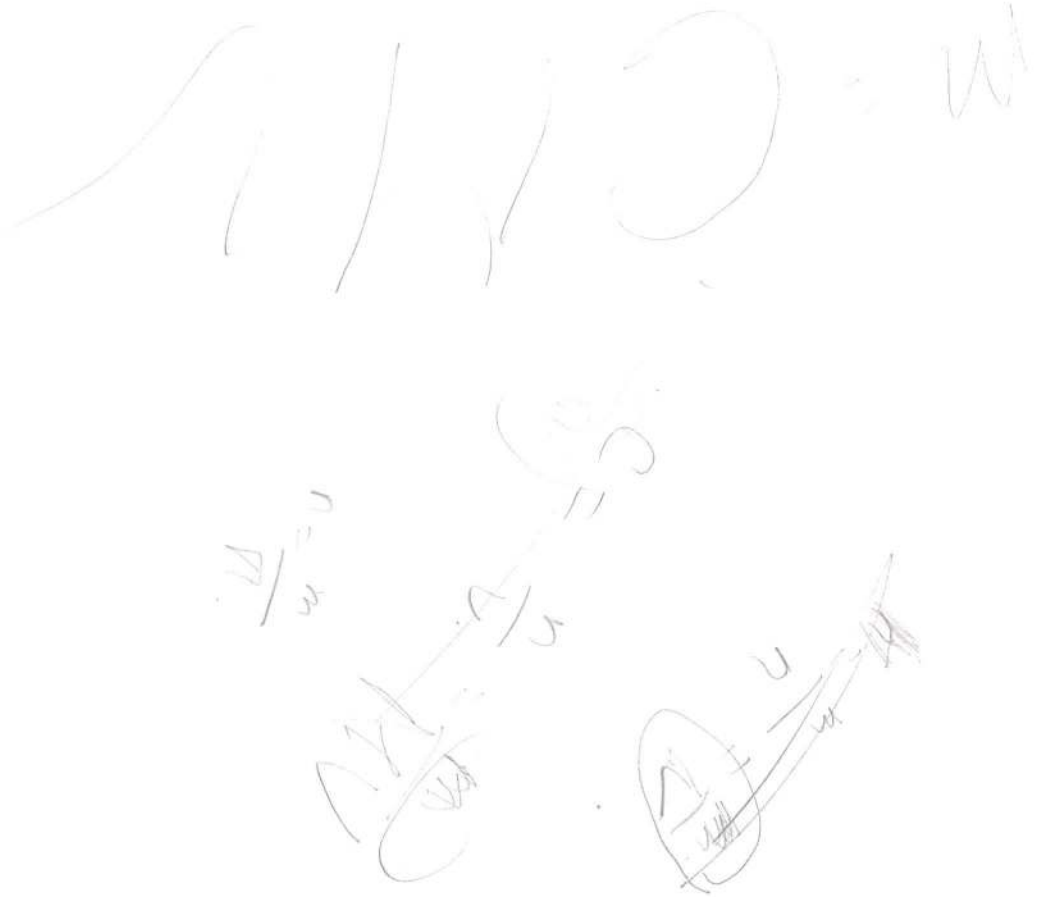
Acc to stoich at equivalence

$n_{soln} = n_{KMnO_4} = 0.0937$ mol

$M_{KMnO_4} = 39.0 + 54.94 + 4(16.00) = 157.94$ g/mol

$m = n \times M = 0.0937 \times 157.94 = 14.798$ g

3



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Time: 10min **Chemistry 205** **Friday, February 15, 2013**
Drop quiz 1 **H. Deeb**

Name: _ **Section:** 3

$C = \frac{n}{V}$

1. A 25.00 mL sample of 0.100 M HCl is titrated with 0.100 M NaOH.

a) What is the pH of the solution before any addition of NaOH?

$pH = -\log [H^+]$.

$= -\log [0.1]$.

+2

b) What is the pH of the solution when 24.5 mL of NaOH have been added?

HCl + NaOH.

25 x 0.1. 24.5 * 0.1.

2,5 - 2,45.

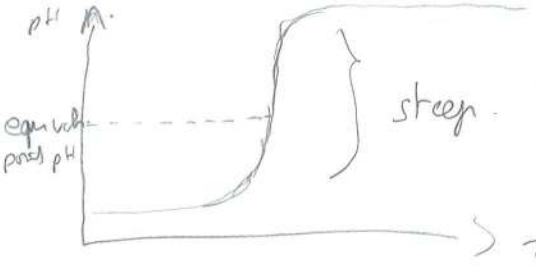
= 0,05.

$\frac{0,05}{25+24.5.} = \frac{0,05}{49.5}$

+4

$pH = -\log \left[\frac{0,05}{49.5}\right]$

c) Sketch a titration curve for the above titration and label it properly showing the equivalence point.



pka should be present on the steep.

+3

d) Based on your drawing, can an indicator of $K_a = 1.0 \times 10^{-9}$ be used for the above titration? Justify your answer properly.

+2

$pka = -\log ka = -\log [1,0 \times 10^{-9}]$

$pH = pka \pm 1$

If the pka value lies between the range ± 1 or it is present on the steep of the curve then the indicator is good for the experiment if not then it is bad for the experiment.

==>

~~If the pka~~

~~If the ± pka value still lies within the equivalence~~

If the equivalence point lies between the ± of the pka values calculated.

~~[illegible]~~ or if the ± pka value is ~~present~~ present or the steep of the curve Then the indicator is good for the experiment.