# CANOSSA SECONDARY SCHOOL
### PRE-TERMINAL EXAMINATION, MAY 2013
### CHEMISTRY ALTERNATIVE PRACTICAL FORM IV

TIME:2.00 HRS        NAME………………………………………………………………………….……….

**INSTRUCTIONS:**
1. Attempt all three questions, question 1 carries 20 marks, question 2 & 3 carries 15@
2. In question 1 and 2 follow the procedures given. For question three credit will be given for precisely recorded observation and for correctly drawn inferences.
3. Qualitative analysis guide pamphlets will be given

1. You are provided with the following:-
   Solution P contains 4·0g of sodium hydroxide per litre of solution. Solution Q containing 12·6g of hydrated oxalic acid.

   COOH
   |        $XH_2O$, per litre solution
   COOH
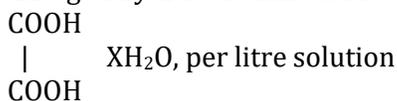
   Put the acid solution in the burette and titrate equal portions of the base solution using phenolphthalein indicator provided. The following table should be completed.

   a) Table of result (burette reading) in $cm^3$

| Titration no. | Pilot | 1 | 2 | 3 |
|---|---|---|---|---|
| Final reading |  |  |  |  |
| Initial reading |  |  |  |  |
| Volume used |  |  |  |  |

   b) The volume of the pipette used _____ $cm^3$
   c) The color change at the end-point was from _____ to _____
   d) The volume of solution Q needed for complete neutralization was _____ $cm^3$.
   e) Give a balanced chemical equation for the reaction of solution P and Q above.
   f) Calculate (from (e) above)
   　　i) The molarity of the acid solution Q
   　　ii) The concentration of the acid solution Q in $g/dm^3$
   　　iii) The value of X.                                    (20 marks)

2. Substance B contains one cation and one anion. Using systematic qualitative analysis. Procedures, carry out tests on B in order to identify the radicals present in it.

| Test | Observation | Inference |
|---|---|---|
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

   The ions present in substance B are cation _____ Anion _____
   The compound B is _____                (15 marks)

3. Measure 50cm³ of the sodium thiosulphate solution into the conical flask. Place the flask and the contents on a piece of white paper marked 'X' on it. Measure out 10cm³ of a dil. Hydrochloric acid and add it to the solution in the flask, at the same time start the stop watch (the flask should be swirled once or twice before placing it over the piece of paper). Look down vertically onto the letter '**X**' and note the time when the letter '**X**' Disappears. Repeat the whole procedure above using 40, 30, 20 and 10cm³ of thiosulphate solution made up in each case to 50cm³ with water.

| Exp No:- | Vol. of $NaS_2O_3$(cm³) | Vol. of $H_2O$(cm³) | Time(s) | $1/_{Time}$(Sec) |
|---|---|---|---|---|
| 1. | 50 | 0 | | |
| 2 | 40 | 10 | | |
| 3 | 30 | 20 | | |
| 4 | 20 | 30 | | |
| 5 | 10 | 40 | | |

a) Plot a graph of conc. of thiosulphate (volume) against 1/time
b) What happens to the speed of the reaction as the concentration of the thiosulphate solution is reduced (as the solution is dilute with water)
c) What is the aim of this experiment?  (25 marks)

**END.**