**Lab sheet #2**

**-Preparation and Dilution of solutions-**

**Objectives:**

* To learn how to prepare solutions with different concentration expression.
* To get familiar with solution dilutions by different methods.

 **Method:**

1. **Preparation of solutions:**

(1)……………………

**You are provided with solid NaOH, Prepare 50ml with 0.08M NaOH solution.**

Calculation:

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🡺To prepare the 0.08M NaOH solution ……………..g of solid NaOH should be dissolved in a little volume of water then the volume made up to ………….ml ,by the addition of water.

(2)……………………

**You are provided with solid NaCl, Prepare 50ml with 1.5 w/v% solution of NaCl.**

Calculation:

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🡺 To prepare the 1.5 w/v% solution ………….g of NaCl should be dissolved in little water and the volume made up to ……….ml by the addition of water.

(3)……………………

**Prepare 100ml with 0.4 M HCl solutions starting with the concentrated HCl solution you are provided with: (w/w%= 36 , S.Gr =1.18 ).**

Calculation:

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🡺 To prepare the 100ml of 0.4M HCl solution ……….ml of stock (i.e. concentrated HCl) solution is needed and the volume made up to ……..ml by the addition of water.

🡺 Measure and record the pH value of the acid you prepared……………………

🡺 Calculate the pH of the acid (pH= - log [H+] )……………………………………………..

🡺Comment on your accuracy? …………………………..

1. **Solution dilutions:**

(1)……………………

**Prepare 50ml with 1:20 dilution using the 0.08M NaOH solution you previously prepared.**

Calculation:

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🡺 To prepare the 1:20 dilution ……....ml of the starting solution (0.08M NaOH) is needed and volume made up to a final volume of ………..ml.

(2)……………………

**Prepare 100ml of 0.2M HCl from the previously 0.4M HCl solution you previously prepared.**Calculation:

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🡺 To prepare the 0.2M HCl ……..ml of the starting solution (0.4M HCl) is needed and volume made up to a total volume of ……..ml by adding water.

(3)……………………

**Starting with a 0.2 M stock solution of hydrochloric acid, prepare 8ml of four standard solutions (1 to 4) of the following Molarity respectively (dilution 2:8) :
(1) …………. M (2) …………. M (3) …………. M (4) …………. M .**

Calculation:

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🡺 **To prepare standard solution 1:** ……… ml of the stock 0.2M solution is needed and volume made up to …….. ml with distilled water.

 🡺 **To prepare standard solution 2-4:** ……… ml of the previously diluted solution is taken and volume is made up to a final volume of …… ml by the addition of distilled water.

**Note:** Atomic weights: Na = 23, Cl= 35.5, O = 16, H = 1