

# Chemistry report



**ASSIGN  
BUSTER**

To prepare a standard solution of iron (II) \* To determine the concentration of potassium permanganate solution Hypothesis : Apparatus/Materials : A) Preparation of Standard Iron (II) Solution Pure hydrated iron (II) ammonium sulfate,  $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ , concentrated sulfuric acid, electronic balance, 250mL volumetric flask with stopper , labels , beakers, dropper, distilled water, filter funnels B) Standardising Potassium Permanganate By Titration

Standard iron (II) ammonium sulfate solution, potassium permanganate solution,  $\text{KMnO}_4$ , 2M sulfuric acid, 50mL burette, 25mL pipette, 250mL conical flask, 10mL measuring cylinder, retort stand and clamp, white tile, filter funnels Procedures : A) Preparation of Standard Iron (II) Solution 1. 6g of hydrated iron (II) ammonium sulfate is weighed accurately by using a clean and dry 50mL beaker. 2. Some distilled water is added to dissolve the salt and the solution is transferred to a 250mL volumetric flask using a filter funnel.

The container is rinsed carefully to make sure all the risings go into the conical flask. 3. The volumetric flask is filled with three-quarters of the flask and then , the flask is stoppered and mixed well. The volumetric flask is then topped up with distilled water until the calibration mark by using a dropper and mixed again. 4. 100mL of water is added and then 5mL of concentrated sulfuric acid from the fume hood is added slowly into the volumetric flask. 5. The volumetric flask is closed with a stopper and shaken and then the distilled water is used to make up to the mark.

B) Standardising Potassium Permanganate By Titration 1. Permanganate solution is placed in the burette by using a filter funnel and the initial reading

is recorded. 2. 25. 0mL of the iron (II) solution is pipetted into a clean 250mL conical flask. 10mL of 2M sulfuric acid is measured and added into 250mL conical flask using measuring cylinder. 3. The iron (II) solution is titrated until the end point and the final reading was recorded. 4. Titration is repeated until three concordant values are obtained.

The number of moles of  $\text{MnO}_4^-$  :  $n\text{MnO}_4^- - n\text{Fe}^{2+} = 15$   $n\text{MnO}_4^- = 1/5( 0.00153) n\text{MnO}_4^- = 3.06 \times 10^{-4}\text{mol}$  The concentration of  $\text{MnO}_4^-$  :  $n\text{MnO}_4^- = CV C = nV C_{\text{MnO}_4^-} = 3.06 \times 10^{-4} / 14.9 \times 1000 = 0.0205\text{mol/L}$  Discussion : The three titre values obtained are concordant with each other because the difference between the highest and the lowest titre value is only 0.01mL. Therefore, the result has high precision which has minimum random errors. Precision is affected by random errors.