Friday Worksheet **Name: …….**
Volumetric analysis worksheet 6

1. ***Volumetric Analysis*** is an analytical technique that can be used for many different types of aqueous reactions other than acid/base reactions. Consider the following procedure.

   To analyse the concentration of hydrogen peroxide in a sample of hair bleach a student placed 20.00 mL of the bleach in a 250.0 mL volumetric flask and made it up to the mark with distilled water. A 25.00 mL aliquot of the diluted bleach was then taken and titrated against 0.150 M acidified potassium permanganate solution ($KMnO_{4\,(aq)}$). The relevant equation for this reaction is given by:

   $$2MnO_4^-{}_{(aq)} + 5H_2O_{2(aq)} + 16H^+{}_{(aq)} \rightarrow 2Mn^{2+}{}_{(aq)} + 8H_2O_{(l)} + 5O_{2(g)} + 10H^+(aq)$$

   a. Give a balanced half equation for the oxidation reaction

   b. Give a balanced half equation for the reduction reaction

   c. If the average titre for the 25.00 mL aliquots was 28.35 mL. Calculate the molarity of the hydrogen peroxide in the ***original sample*** of hair bleach. Clearly show your workings out.