Friday Worksheet **Name: …….**
Volumetric analysis worksheet 7

A 11.0 gram sample of Vodka was analysed for its alcohol content. The sample was placed in a 300 mL volumetric flask and made to the mark with distilled water. A 20.0 mL aliquot of the diluted Vodka was taken from the volumetric flask and placed in a conical flask containing some distilled water from a previous washing.

The 20.0 mL aliquots were titrated against a 0.140 M $Cr_2O_7^{2-}$ solution and an average titre of 12.32 mL was obtained.
The reaction between the alcohol and the dichromate solution is given below

$$2Cr_2O_7^{2-}{}_{(aq)} + 3CH_3CH_2OH_{(aq)} + 16H^+{}_{(aq)} \rightarrow 4Cr^{3+}{}_{(aq)} + 3CH_3COOH_{(aq)} + 11H_2O_{(l)}$$

a) Calculate the amount in mol of $Cr_2O_7^{2-}$ in the average titre.

b) Calculate the amount, in mol, of CH_3CH_2OH in the conical flask

c) Calculate the amount, in mol, of CH_3CH_2OH in the volumetric flask.

d) Calculate the amount, in mol, of alcohol in the sample of vodka

e) Calculate the percentage, by mass, of ethanol in the vodka.

f) What will be the impact on the calculation of the final result of having water in the conical flask?