

Lesson 5 – volumetric analysis

1) Jonathon analysed a sample of vinegar for its acetic acid content. Using a 25mL pipette he took a 25.00 mL sample of vinegar stock solution and placed it in a 250 mL volumetric flask. Distilled water was then added to the mark. A 20.00 mL sample was taken from the volumetric flask and placed in a 100mL conical flask. The sample in the conical was titrated against a 0.100 M NaOH solution. A titre of 17.85 mL was needed to reach the end point.

a) Stephen also conducted the same investigation. He rinsed his conical flask, however, with distilled water. Would his result be higher, lower or the same as Jonathon's? Explain

2 marks

b) Stephen conducted the investigation for a second time. This time he rinsed his burette with distilled water. Would his result be higher, lower or the same as Jonathon's? Explain

2 marks

c) Acetic acid is a monoprotic acid (CH_3COOH). Write a balanced chemical equation for the reaction between acetic acid and NaOH.

2 marks

d) Calculate the mol of acetic acid present in the 20.00mL sample placed in the conical flask.

2 marks

e) Calculate the concentration of acetic acid in the volumetric flask in mol/L.

2 marks

f) Calculate the concentration of acetic acid, in mol/L, found in the stock solution, to the right number of significant figures.

2 marks

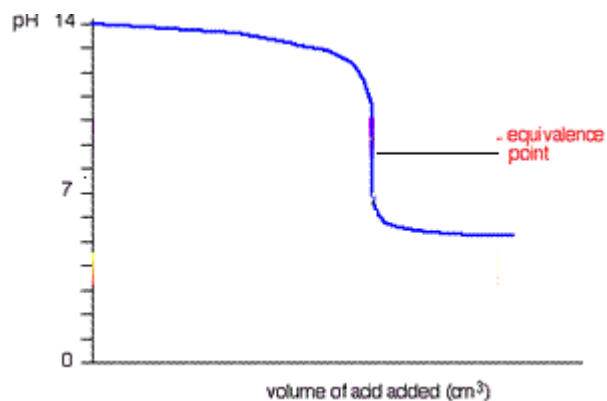
g) Explain the difference between equivalence point and end point.

2 marks

h) A titration was conducted and the pH curve shown on the right. Select from the words below to complete the sentence.

*strong acid, weak acid,
strong base, weak base*

A _____ is titrated against a _____



2 marks

i) Two indicators are provided for students to use. Phenolphthalein and methyl orange. Which indicator should be used and why?

2 marks

j) Explain why the equivalence point, shown on the pH curve above is not at pH of 7?

1 mark