Worksheet 20.1

Acids, bases and pH

1 Explain the terms **strong acid** and **weak acid**. [4]

2 **a** Define **pH**. [1]

b Write the expression for $[H^+(aq)]$ in terms of the pH. [1]

3 For this question you will need the following data:

$K_w = 1.00 \quad 10^{-14}$ mol^2 dm^{-6}

M_r values:

benzoic acid = 122.0
sodium benzoate = 144.0
sodium hydroxide = 40.0
hydrochloric acid = 36.5

Calculate the pH of the following solutions.

a 0.0300 mol dm^{-3} nitric acid [1]

b 0.200 mol dm^{-3} hydrochloric acid [1]

c 0.0100 mol dm^{-3} sodium hydroxide [2]

d 0.00600 mol dm^{-3} sodium hydroxide [2]

e water [3]

f 750 cm^3 of an aqueous solution containing 15.0 g of sodium hydroxide [4]

g 250 cm^3 of an aqueous solution containing 3.65 g of hydrochloric acid [3]

h all of solutions **f** and **g** mixed together [4]

i equal amounts of solutions **f** and **g** mixed together [4]