

11. Which of the solutions below would **not** be useful in distinguishing between the NaOH and Na<sub>2</sub>SO<sub>4</sub> solutions, when a small amount was added to each?

- a. Zn(NO<sub>3</sub>)<sub>2</sub>(aq)
- b. BaCl<sub>2</sub>(aq)
- c. Pb(NO<sub>3</sub>)<sub>2</sub>(aq)
- d. MgCl<sub>2</sub>(aq)

Suggested working time: 60 minutes.

#### Question 26

(9 marks)

Write **ionic** equations for any reactions that occur in the following procedures. If no reaction occurs write 'no reaction'. In each case **describe in full what you would observe**, including any colours, odours, precipitates (give the colour) and gases evolved (give the colour or describe as colourless). Give structural formulae for any organic substances involved.

2 – ionic equation (1 reactants, 1 products, -1 unbalanced, -1 no states) (2 marks)

1 – observation (1 mark)

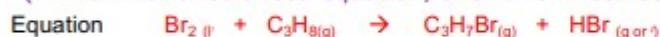
- a) Bromine liquid is introduced to a container of propane gas in the presence of ultraviolet light. The reaction does not go to completion.

(3 marks)

Equations were marked as above (1 mark given for correct formula of all reactants)

(1 mark for correct formula of all products - ½ marks also awarded)

(-1 mark for unbalanced equation; and -1 for incorrect or missing states.)



Observation A red liquid and a colourless gas are mixed, the red colour slowly fades.

- b) A solution of phosphoric acid is added to barium hydroxide solution.

(3 marks)

Phosphoric acid is a weak electrolyte so must be written in molecular form in ionic equations!



Observation Two colourless solutions are mixed to form a white precipitate in a colourless solution.

- c) Ammonium ethanoate solution is added to sodium hydroxide solution.

(3 marks)



Observation Two colourless solutions are mixed to form a colourless solution and a pungent, gas.