REACTIONS OF ACIDS 2

PART A Complete the following word equations for reactions.

1) zinc + sulfuric acid → **zinc sulfate + hydrogen**

2) nitric acid + calcium carbonate → **calcium nitrate + water + carbon dioxide**

3) potassium hydroxide + sulfuric acid → **potassium sulfate + water**

4) nitric acid + calcium oxide → **calcium nitrate + water .**

5) nitric acid + ammonia → **ammonium nitrate**

6) **calcium + nitric acid** → calcium nitrate + hydrogen

7) **lead oxide (or lead hydroxide) + sulfuric** acid → lead sulfate + water

8) **zinc carbonate + sulfuric acid** → zinc sulfate + water + carbon dioxide

9) **ammonia + phosphoric acid** → ammonium phosphate

10) calcium carbonate + **hydrochloric acid** → calcium chloride + **water + carbon dioxide**

11) tin oxide + **hydrochloric acid** → tin chloride **+ water**

12) calcium hydroxide + **nitric acid** → **water** + calcium nitrate

13) citric acid + potassium hydroxide → **potassium citrate + water**

14) **magnesium** + citric acid → magnesium citrate + hydrogen

15) phosphoric acid **+ potassium hydroxide (or potassium oxide)** → potassium phosphate + water

PART B Write **ionic** equations for reactions 3, 12 and 13.

3) $H^+ + OH^- \rightarrow H_2O$

12) $H^+ + OH^- \rightarrow H_2O$

13) $H^+ + OH^- \rightarrow H_2O$

PART C Complete the table to show whether each of the reactions involves the transfer of protons or electrons (give the number of the equations)

transfer of protons (acid-base)	transfer of electrons (redox)
2, 3, 4, 5 ,7, 8, 9, 10, 11, 12, 13, 15	**1, 6, 14**

PART D Write a balanced equation for each of the following reactions.

3) $2\ KOH + H_2SO_4 \rightarrow K_2SO_4 + 2\ H_2O$

4) $2\ HNO_3 + CaO \rightarrow Ca(NO_3)_2 + H_2O$

5) $HNO_3 + NH_3 \rightarrow NH_4NO_3$

Area	Strength	To develop	Area	Strength	To develop	Area	Strength	To develop
Done with care and thoroughness			Word equations for acid reactions			Write formulae		
Good SPG			Write ionic equations for acid-alkali			Write balanced equations		
Can identify salts formed from acids			Electron v proton transfer					