**Open ended question ‘answers**

NB – these are suggested responses, other answers may be accepted by the SQA

**Question 1;**

* Potassium chloride has ionic bonding and glucose has covalent bonding
* Definitions of ionic and covalent bonding.
* Discuss differences in properties mainly melting/boiling points and conduction of electricity.
* Why is conduction possible as an ionic solution?
* If you do biology you could also discuss the test of glucose

**Question 2;**

* Mention names of group 1, 7 and 0
* Discuss the characteristic chemical properties of these groups – i.e. very reactive, unreactive, metal/non-metal etc.
* How would you know if it was a metal or non-metal?
* Explain why the groups show these characteristics – valency and number of outer electrons

**Question 3;**

* Discuss reactions with oxygen, water and acid
* Write the general word equations for the above reactions
* Discuss electrochemical cells and describe how the voltage produced can help show the reactivity (i.e. bigger the voltage, the bigger the gap between the metals…)

**Question 4;**

* Write the chemical formulas of both hydrochloric acid and ethanoic acid
* Discuss the properties of ethanoic acid
* Describe the difference in pH of the two acids
* Describe electrolysis of hydrochloric acid and importantly the products of it. (i.e. what gases would be produced and each electrode?)

**Question 5;** (see jotter)

* Use data book to discuss difference in solubility of copper sulphate and calcium sulphate – how would you prove this?
* Describe displacement reactions i.e. metal higher up in electrochemical series displaces a metal lower down but a metal lower down cannot displace a metal higher up.
* Choose a metal higher than copper but lower than calcium and write the word equation for the reactions.
* Write the chemical equation for the copper sulphate + ‘metal x’ reaction

**Question 6;**

* Discuss neutralisation reactions using general word equations
* Describe how you would make calcium sulphate (what acid/base?)
* Write a balanced chemical equation of the neutralisation reaction described in bullet point 2.
* Describe how you would get rid of the water to obtain a dry sample of the calcium sulphate.

**Question 7;**

* What type of bonding does it have if it is a liquid at room temperature?
* Why is this unusual?
* Discuss properties of bonding types.
* Write chemical formula of titanium (IV) chloride

**Question 8;**

* Describe a method of collecting and measuring the volume of CO2 given off during the reaction.
* Mention the importance of measuring time.
* Describe the reaction rate calculation equation.
* Describe the units of the reaction rate if volume and time are used.

**Question 9;**

* Describe properties of metals (mainly aluminium) and why a metal boat being safe to travel across lava is unrealistic.
* State the melting point of aluminium and discuss whether or not the movie plot is realistic.
* What do hydrogen chloride and sulphur trioxide produce when they dissolve in water?
* Describe the reaction of aluminium and acid using word/balanced chemical equations
* Is sulphur dioxide safe for humans to breathe in? (sulphur dioxide is responsible for acid rain…