CSEC Chemistry – Grade 10

Planning and Designing Activity #1

Instructions: Read the following questions carefully then type the answers in the spaces provided. Write the questions in your notebook as well.

1 (A) . Three (3) colourless liquids in unlabeled bottles were found in a laboratory. You are told that they can only be sodium hydroxide, hydrochloric acid and water. You have decided to test the pH of the different liquids using universal indicator OR a pH meter. Match each of the following variables with their correct examples by typing in the roman numerals.

i. CONTROLLED VARIABLE	ii. RESPONDING (DEPENDENT) VARIABLE	iii. MANIPULATED (INDEPENDENT) VARIABLE

a) Volume of liquid - ____

b) pH of each liquid as indicated by colour change of indicator OR number displayed on pH meter - ____

c) Type of indicator - ____

d) Separate bottles of colourless liquid - ____

(B). Farmer Joe and Farmer Jim are neighbours who both applied ammonium fertilizer to their soil at the same time. After a period of heavy rain, Famer Joe added lime (calcium hydroxide) to his soil. A few weeks later, Farmer Jim's corn crops were flourishing while Farmer Joe's crops were wilting. You have decided to check the quantity of ammonium fertilizer remaining in each soil by reacting with sodium hydroxide and measuring the volume of ammonia gas given off OR simply testing the pH of each soli solution. Match the variables above with their correct examples.

a) Volume of ammonia gas given off as measured on a gas syringe OR pH of soil solution as indicated by colour change of indicator - ____

b) Mass of each soil - ____

c) Volume of sodium hydroxide OR water added -____

d) Locations/farms from which soil samples are taken - ____

2. Match each of the following terms with their correct definition by typing in the roman numerals .

i.	CONTROLLED VARIABLE	iii.	MANIPULATED (INDEPENDENT) VARIABLE	vi.	ASSUMPTION	x.	TREATMENT OF RESULTS
ii.	RESPONDING (DEPENDENT) VARIABLE	iv.	CONTROL	vii.	SOURCE OF ERROR	xi.	EXPECTED RESULTS
		v.	LIMITATION	viii.	PRECAUTION	xii.	HYPOTHESIS
				ix.	UNCERTAINTY		

a) A quality assurance measure/blank sample used to ensure that your reagents are not contaminated. ____

b) The differences which exist among the samples being tested. ____

c) The factors kept constant among the samples being tested. ____

d) The measurable parameter which indicates what is different about the samples tested. ____

e) An instrument error which is accounted for by manufacturers of measuring equipment e.g. A typical burette has a ± 0.05 ml error. This means values may be 0.05 greater or less than the actual accurate value. At advanced levels, this error can be accounted for in calculations. ____

f) A statement with theoretical ideas of what you think your experimental results will be based on your hypothesis. It also includes blank data table(s) showing layout for data capture. ____

g) A short statement expressing how your hypothesis will be treated whether or not you obtain your expected results. ____

h) Things which your experiment cannot account for based on the scope of your measurement. ____

i) An idea about your experiment which is not fully backed by evidence. ____

j) Factors which can cause inaccuracies in results. ____

k) Measures implemented to reduce inaccuracies and incidents in the experiment. ____

l) An educated guess/idea about the reason/solution for a particular problem. ____