

CHEMISTRY ASSESSMENT TEST 2

TIME : 60 MINUTES

SECTION A

1. (a) The full symbol of Phosphorous atom is $^{31}_{15}\text{P}$.

Write;

- (i) The electronic configuration of phosphorous. (01 mark)

- (ii) The formulae of two compounds that can be formed when phosphorous reacts with chlorine. (01 mark)

- (b) An oxide of phosphorous, Q consists of 43.7% phosphorous by mass.

- (i) Calculate the empirical formula of Q (O = 16, P = 31) (03 marks)

- (ii). Given that the molecular mass of Q is 141g, calculate the molecular formula of Q (02 marks)

- (iii). Write the name of Q (01 mark)

- (iv). Write the name and formula of another compound formed when phosphorous reacts with oxygen. (02 marks)

2. (a) Define the following terms: (03 marks)

- (i) An acid

- (ii) A base

(iii) A salt

.....
(b) State what would be observed if an aqueous solution of each of the following substances was tested with a blue or red litmus paper.

(i) Ammonium Chloride (02 marks)

Blue litmus paper

.....
Red litmus paper

.....
(ii). Sodium Chloride (02 marks)

Blue litmus paper

.....
Red litmus paper

.....
(iii). Sodium ethanoate (02 marks)

Blue litmus paper

.....
Red litmus paper

.....
(c) Write the equation for the reaction between potassium oxide and

(i) Water (01 ½ marks)

.....
(ii). Hydrochloric acid (01 ½ marks)

.....
3. Below is a list of “salts”

- A. Lead (II) Chloride
- B. Sodium Sulphate
- C. Silver nitrate
- D. Iron (III) Chloride
- E. Magnesium carbonate
- F. Sodium chloride

(a) Which of the salts, when heated;

(i) Leaves a grey metal as a residue (0 ½ mark)

(ii) Would directly turn into a gas(es) without first melting. (0 ½ mark)

(iii) Decomposes to form a metal oxide and a colourless gas (0 ½ mark)

(iv) Does not decompose on heating. (0 ½ mark)

(b) Write the equation to show the effect of heat on the salts you have given in

(i) a (i) (01 ½ marks)

(ii) a (iii) (01 ½ marks)

(c) Identify the list of salt(s) that; (include the chemical formula of the salt)

(i) Can be prepared by precipitation method (01 mark)

(ii) Can be prepared by neutralization method (01 mark)

(iii) Are soluble in hot water only (01 mark)

4. The table below gives information of four atoms P, Q, R and S that belong in the periodic table. Use the information to answer the questions that follow.

Atom	Group	Electronic configuration
P	I	2:8:8
Q	VII	2:8:8
R	III	2:8
S	VI	2:8

(a) Write the electronic configuration of atom;

(i) P (0 ½ mark)

(ii) R (0 ½ mark)

(iii) S

(0 ½ mark)

.....
(iv) Q

(0 ½ mark)

.....
(b) Identify the atoms that belong to the same period in the periodic table.

(01 mark)

.....
(c) Write the formula of the compound and type of bond formed between atom;

(04 marks)

(i) P and Q

.....
(ii) S and Q

.....
(iii) P and S

.....
(iv) R and Q

.....
(d) Using the outer most energy level diagrams, show how a compound is formed between atom;

(08 marks)

(i) R and Q

(ii) P and Q

(iii) S and Q

(iv) P and S

5. (a) Differentiate between a mixture and a compound

(01 mark)

.....

.....

.....

(b) Give one example of a mixture that can be separated by each of the following laboratory methods and give a reason for your answer.

(i) Fractional distillation

(02 marks)

Mixture

.....

Reason

.....

(ii) Separating funnel

(02 marks)

Mixture

.....

Reason

.....

(iii) Chromatography

(02 marks)

Mixture

.....

Reason

.....

(iv) Sublimation

(02 marks)

Mixture

.....

Reason

.....

(v) Fractional crystallization

(02 marks)

Mixture

.....

Reason

(vi) Use of a magnet

(02 marks)

Mixture

Reason

(vii) Filtration

(02 marks)

Mixture

Reason

6. (a) Write the chemical formulae of each of the following compounds.

(03 marks)

(i) Potassium chloride

(ii) Ammonium sulphate

(iii) Copper(II) hydroxide

(iv) Sodium peroxide

(v) Calcium phosphate

(vi) Carbon disulphide

(b) Name the following chemical compounds

(04 marks)

(i) Na_2SO_4

(ii) KNO_2

(iii) PCl_5

(iv) SO_3

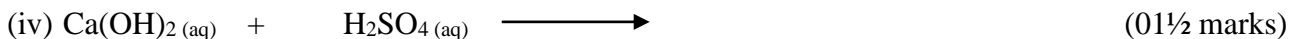
(v) Fe_2O_3

(vi) H_2S

(vii) $\text{Al}_2(\text{SO}_4)_3$

(viii) $\text{Ca}(\text{HCO}_3)_2$

(c) Complete and balance the following equations for reaction.



SECTION B

7. (a) Draw a labelled diagram of an atom and show the location of the fundamental particles. (04 marks)

(b) ${}^{35}_{17}\text{X}$ and ${}^{37}_{11}\text{W}$ are atoms of an element (X and W are not actual symbols)

(i) State the name given to atom X and W (01 mark)

(ii) State the similarity and difference between atom X and W. (02 marks)

(iii) How does the difference between X and W mentioned in b(ii) above arise? (01 mark)

(iv) Identify one element in the periodic table whose atoms can exist in the form of X and W.

(01 mark)

(c). (i) Write down the electronic configuration and electronic structure of chlorine and sodium.

(04 marks)

(ii) Using the outer most electrons only, draw a diagram to show how sodium and chlorine form a compound. (02 marks)

(iii). State the difference in properties between chlorine molecules and sodium chloride.

(02 marks)

END

“The secret to success without hard work is still a secret!!!!”