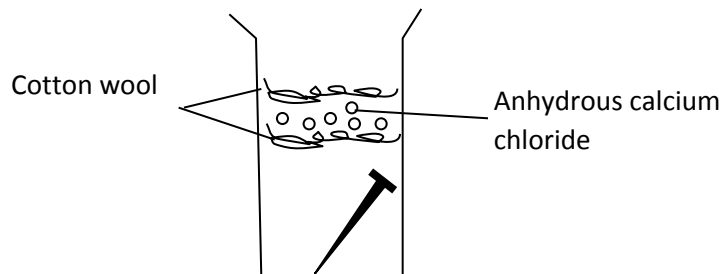


SENIOR THREE CHEMISTRY REVISION QUESTIONS

1. a) Write the chemical formula of each of the product formed when each of the following elements are burnt in excess oxygen.
 - i) Carbon
 - ii) Magnesium
 - iii) Hydrogen
 - iv) Zincb) State the type of oxide formed in each case:
 - i) Carbon
 - ii) Magnesium
 - iii) Hydrogen
 - iv) Zinc
 2. Define the terms:
 - i) a normal salt
 - ii) an acid saltb) Give one example of
 - i) a normal salt
 - ii) an acid salt
 3. Oxygen can be prepared from hydrogen peroxide in presence of a catalyst
 - a) i) Name the catalyst used
 - ii) Write equation for the formation of oxygen.b) i) Name the method used to collect a dry sample of oxygen gas
 - ii) State the properties of oxygen gas that enables the collection method named above.
4. a) State the conditions necessary for rusting to occur.

b) During an investigation to show the conditions under which an iron nail may rust, an experiment was set up as shown in the figure below:



State the condition which was eliminated.

c) State one disadvantage of rusting.

d) i) What is galvanised iron?

ii) State one use of galvanised iron

5. A compound has the following percentage composition.

Carbon 40% , hydrogen 6.7% and oxygen 53.3%. The relative molecular mass by the

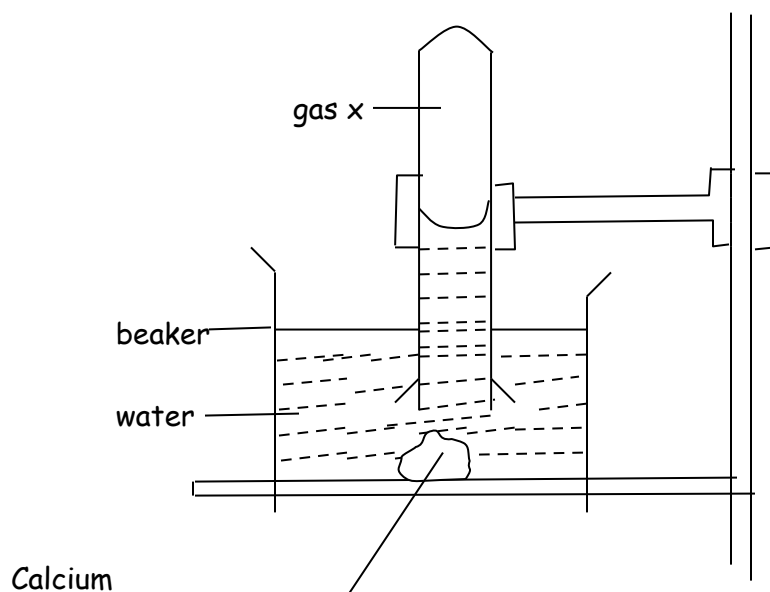
compound is 180.

Calculate;

(a) The simplest formula of the compound.

(b) The molecular formula of the compound.

6. The apparatus below was used to investigate the action of calcium on water.



- (a) (i) Name the gas x (1 mark)
- (ii) Describe a test you would carryout to identify gas x. (1 mark)
- (b) What will be observed in the beaker? (1 mark)
- (c) Write an equation for the reaction between calcium and water. (1 $\frac{1}{2}$ marks)
- (d) Mention one physical property of calcium that is evident from the diagram. (1 mark)

7. The number of protons, neutrons and electrons in particles A to F are given in the following table.

Particle	Protons	Neutrons	Electrons
A	18	22	18
B	17	18	17
C	17	20	17
D	8	10	10
E	11	12	10
F	12	12	12

Choose from the table the letters that represent

- (a) a neutral atom of a metal (1 mark)
- (b) an atom of a noble gas (1 mark)
- (c) A pair of isotopes (1 mark)
- (d) A cation (1 mark)
- (e) An anion (1 mark)

8. (a) What is observed when each of the following are heated?

(i) ZnCO_3 (1 $\frac{1}{2}$ marks)

(ii) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ (1 $\frac{1}{2}$ marks)

(ii) Write equation for the reaction in a (ii) above. (1 $\frac{1}{2}$ marks)

(b) Mention one use of sodium carbonate. (1 mark)

9. The atomic numbers of elements D, Q and R are 6, 13 and 16 respectively

(a) State

(i) the group of elements in the periodic table to which D belongs (½ mark)

(ii) the period in the periodic table to which Q belongs (½ mark)

(iii) the valency of element R. (½ mark)

(b) R reacted separately with D and Q to form compounds. Write using the letters D, Q and R, the formula of the compound that was formed with R reacted with

(i) D (1 mark)

(ii) Q

(c) (i) State which one of the compounds whose formulae you have written in (b) is likely to be a solid at room temperature. (½ mark)

(ii) Give a reason for your answer in (c) (i) (1 mark)

10. State a suitable method by which each of the following mixtures of substances can be separated. (01 mark @)

(a) Copper(ii) sulphate and copper(ii) carbonate.

(b) Diesel and petrol

(c) Sodium carbonate and sodium nitrate.

(d) Carbon tetrachloride and water.

11. (a) When sodium was burnt in air full of oxygen, a yellowish solid T was formed.

Write

(i) the name of solid T (1 mark)

(ii) the formula of T (1 mark)

(b) T reacted with cold water to produce a colourless gas G.

(i) Write equation for the reaction that leads to the formation of G. (1 ½ marks)

(ii) State how G could be tested. (1 ½ marks)

12. The electronic configurations of atoms W, X, Y and Z are 2:4, 2:7, 2:8:3, and 2:8:7 respectively

(a) Identify the atoms of elements which are in the same group in the periodic table

(b) State the period in the periodic table to which element with atom W belongs. (½ mark)

(c) Write the formula of

(i) The ion of atom X (½ mark)

(ii) The compound formed when atom Y reacts with atom Z. (1 mark)

(d) Atom Z can react with atoms W and Y to form compounds Q and R respectively. State which one of the compounds

(i) Can conduct electricity. (1 mark)

(ii) would have a lower solubility in water (1 mark)

13. A piece of magnesium ribbon was placed in a solution of copper (II) sulphate and left to stand.

(a) State what was observed (1 ½ marks)

(b) (i) write an ionic equation for the reaction that took place. (1 ½ marks)

(ii) Name the reaction that took place. Give a reason why the reaction you have named in (b) (ii) is possible.

(1 mark)

(c) Name one other ion which when in aqueous solution can react with magnesium in a similar way to copper (II) ions. (½ mark)

14. In an experiment to determine the formula of an oxide, carbon monoxide was passed over 2.0g of a heated oxide of metal M, 1.6g of a solid residue was formed and the gaseous product produced was passed through a test tube containing calcium hydroxide solution.

(a) State what was observed in the test tube containing calcium hydroxide solution. (½ mark)

(b) Write equation for the reaction that took place in the test tube containing calcium hydroxide solution. (1 ½ marks)

(c) Calculate the empirical formula of the oxide of M. (M = 64) (3 marks)

15. A hoe, which was left in the garden for some weeks, was found coated with some brown solid deposits.

(a) (i). Write the chemical name of the solid. (01 mark)

(ii). State the conditions which led to the formation of the solid. (01 mark)

(b) (i). State two methods by which formation of the solid can be prevented.

(02 marks)

(ii). Give one reason why formation of the solid needs be prevented. (01 mark)

16. The Table below gives information on four elements P, Q, R and S in the Periodic Table. Study the Table and answer the questions that follow.

Element	Charge formed on the ion of the atom	Period
P	+1	3
Q	-2	2
R	+2	4
S	-1	3

(a) Write the electronic configuration of an;

($\frac{1}{2}$ mark@)

(i) Atom of P

(ii) Atom of S

(iii) Ion of Q

(iv) Ion of R

(b) Write the formula of the compound that is formed between;

(i) Atom P and atom S and state the type of bond that would exist in the compound. (1 mark)

(ii) Atoms of Q (1/2 mark)

(c) Using the outer most energy level electrons only; show how element, S bonds with carbon.(atomic number of carbon is 6) (1 mark)

17. The table below shows the effect of heat on the carbonates and nitrates of two metals W and X.

Metal	Carbonates	Nitrates
W	Do not decompose at all	Decompose giving oxygen and residue only
Y	Decompose leaving a yellow residue on cooling	Decomposes leaving a yellow residue on cooling

(a) Suggest one metal in the category of;

(1 mark)

(i) W

(ii) Y

(b) Write equation for the decomposition of the nitrate of the metal you have stated in (a) above. (3 marks)

(i) W

(ii) Y

(c) State what is observed during the process of heating the carbonate of the metal you have stated in category Y. (1 mark)

18. (a) Write the name and formula of one salt that causes permanent hardness of water

(b) State one physical and one chemical method of removing permanent hardness of water.

Physical method. ($\frac{1}{2}$ mark)

Chemical method (1 mark)

(c) Write equation for the reaction that takes place during removal of permanent hardness of water by chemical method.

(1 $\frac{1}{2}$ marks)

(d) State one advantage and one disadvantage of hard water.

Advantages ($\frac{1}{2}$ mark)

Disadvantage ($\frac{1}{2}$ marks)

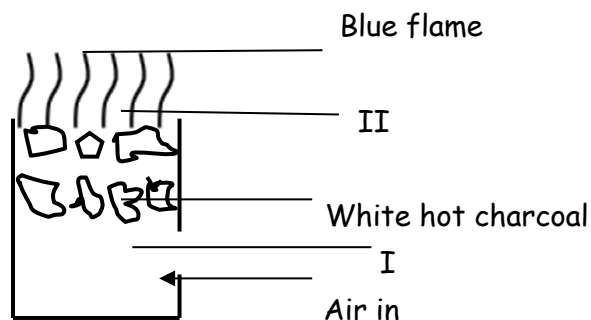
19. (a) State what is meant by the term allotropy. (1mark)

(b) Name one allotrope of carbon which is used in:

(i) making shoe polish ($\frac{1}{2}$ mark)

(i) sugar industry ($\frac{1}{2}$ mark)

(c) The diagram below represents a charcoal burner. Study it and answer the questions that follow.



Write equation for the reaction taking place at:

- (i) I (1½ marks)
(ii) II (1½ marks)

20. (a) Lead (II) carbonate was heated strongly.

(i) State what was observed. (1½marks)

(ii) Write equation for the reaction that took place (1½marks)

(b) Dilute nitric acid was added to lead (II) carbonate and to the resultant solution was added aqueous sodium chloride solution

(i) State what was observed.

(½marks)

(iii) Write equation for the reaction that took place. (1½mark)

21. When 6.0g of impure calcium carbonate was heated strongly until no further changes, 3.0g of residue was left.

a) Write an equation for the reaction (1½ marks)

b) Calculate the percentage of calcium carbonate in the mixture. (3½ marks)

END