

1. Fill in the table below

Element t	Number of electros	Number of neutrons
$^{39}_{19}\text{Q}^+$		

2. A student tested the ph of five solution using universal indicator and obtained the following results.

Solution	Coluor	PH
I	Blue	10
J	Violet	14
K	Red	1
L	Green	7
M	Yellow	5

Which of the solution is likely to be

Potassium hydroxide (1½mk)

Lactic acid(1½mk)

Sulphuric acid1½mk)

Sodium Chloride1½mk)

3. An element Y has isotopes $^{19}_9\text{Y}$ and $^{20}_9\text{Y}$. The relative atomic mass of Y is 19. 8.

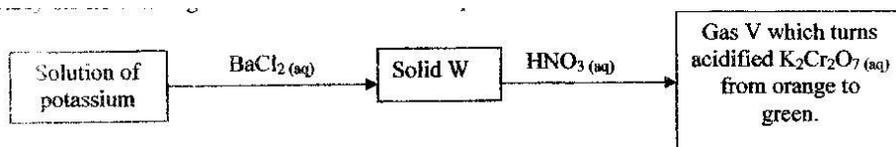
Determine the relative abundance of each isotope as percentage. (2mks)

4. (a) An element Y combined with Chlorine to from a compound. (Y = 14, Cl = 17). Using dots (.) and crosses (x), to represent electronics show the bonding in the compound formed between y and Chlorine. (2mks)

(b) Using dots (.) and crosses (x) to represent electrons draw a diagram to show bonding in Carbon

(II) Oxide (C= 6, O= 8). 1½mk)

5. Study the flow chart given below and answer the questions that follow.

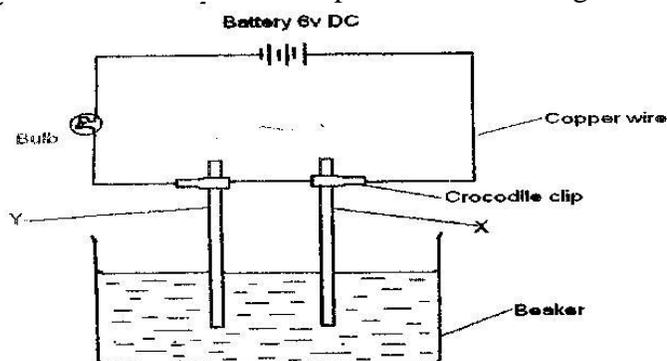


(a) Name gas V (1mk)

(b) Write an ionic equation for the formation of solid W (1 mk)

(c) State what would be observed solid W was allowed to stay overnight and then reacted with dilute Sulphuric (VI) acid?

6. The diagram below illustrates an experiment to investigate the conduction of electricity in liquids.

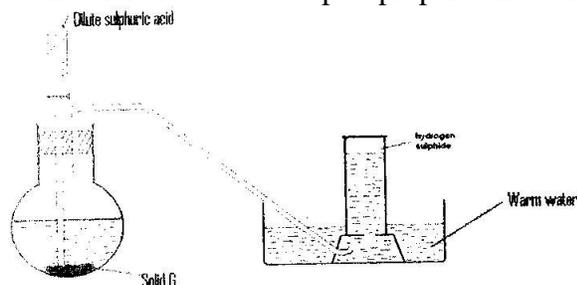


Study it and answer the questions that follow. (X and Y are graphite rods)

- State one mistake in this set up. (1mk)
 - If the liquid in the beaker was Mercury, state the observations made on the bulb and at the electrodes. (1mk)
7. Equal volumes of oxygen and Z took 20 seconds and 30 seconds respectively to diffuse the same hole under same conditions. Find the relative molecular mass Z. ($O = 16$)
8. 0.702g of a gaseous alkane occupies 560cm³ at s.t.p ($C = 12, H = 1$, Molar gas volume at s.t.p. = 22.4dm³).
- Calculate the relative formula mass of the gaseous alkene. (2mks)
 - Draw the structural formula of the alkene. (1mk)
9. The structures shown below represents two cleansing agents A and B.

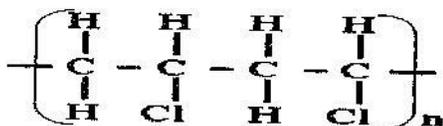


- Which cleansing agent would be more suitable for washing in water containing Magnesium Sulphate? Explain your answer. (2mk)
 - State any advantage that 1 has over 2 (1mk)
10. Apparatus shown below was setup to prepare and collect hydrogen sulphide gas.



- Name solid (1mk)
- Give a reason why warm water is used (1mk)

- c. What observation would be made if hydrogen sulphide gas was bubbled into a solution of Lead (II) ethanoate. (1mk)
- d. Write the ionic equation for the reaction taking place in (c) above. (1mk)
11. Why is solid Carbon (IV Oxide (Dry ice) preferred in cool boxes than the normal ice (Solid water)?
12. In the manufacture of sodium carbonate by the Solvay process, ammonia cal brine trickles down the carbodinator while carbon IV oxide rises up the same tower
- a) What is ammoniacal brine (1 mk)
- b) Write tow equations taking place in they carbonator (2mks)
13. Copper (II) ions ($\text{Cu}^{2+}(\text{aq})$) and Lead (II) ions ($\text{Pb}^{2+}(\text{aq})$) are present in a solution. Describe how can be separated from the solutions as their hydroxides.
14. The structure below shows a common a polymer

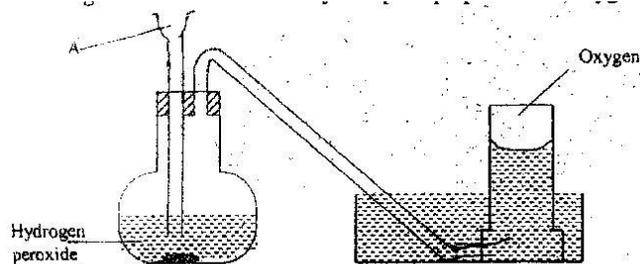


n is a very large number

- a) Give the name of the Polymer (1mk)
- b) Give the Structure o the monomer from which the polymer is derived and name it (1 mk)
- c) Name the Polymerization process that gives the polymer (1mk)
15. 18.7 cm³ of a dibasic acid H₂A required 25 cm³ of 0.1 M NaOH for complete neutralization.
- a) How many moles of Sodium hydroxide are contained in 25 cm³? (1mk)
- b) Calculate the molarity of the dibasic acid (2 mk)
16. Starting with copper (II) Oxide, describe how you can prepare copper (II) sulphate crystals
17. Complete the following by filling inn the missing test and observations. (3mks)

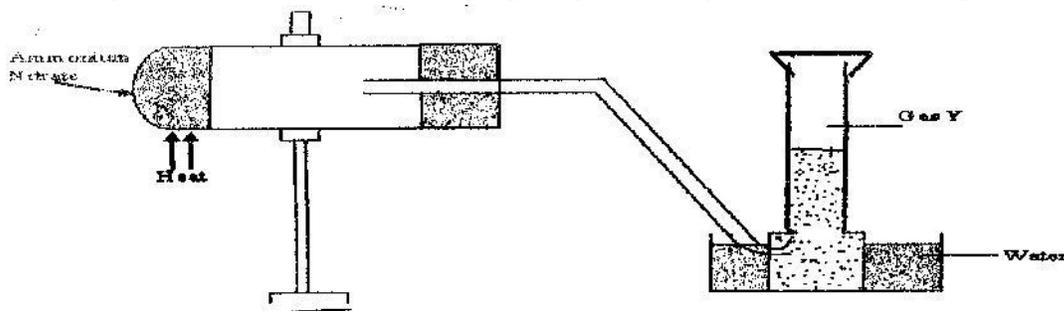
	GAS	TEST	OBSERVATION
1	Ammonia	Put a moist red litmus paper into the gas.	Paper turns to green
2	Sulphur (IV) Oxide		P
3	Ethene	Add a drop of bromine water	

18. The diagram below is a laboratory set up for preparation of oxygen gas.



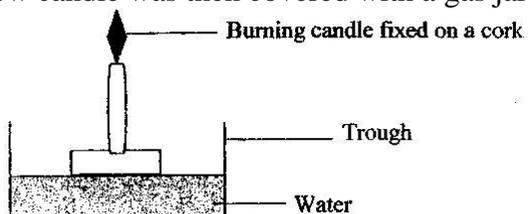
- a. Write solid P (1mk)
- b. Write an equation for the reaction that takes place in the flask. (1mk)

19. The set up shown below was used to prepare gas Y study it and answer the questions.



- i. Identify the gas y.....(1mk)
- ii. Give the confirmatory test for gas Y
- iii. State one use of Gas Y. (1mk)

20. In an experiment a burning candle was made to float on water as shown on the diagram below candle was then covered with a gas jar and the set up was left for 2 minutes.



State and explain two observations made during the experiment (2mk)

21. a) Amorphous carbon is the impure form of carbon. Name two examples of this form of Carbon. (1mk)
- b) State two uses of Amorphous carbon (1mk)

22. The following are observations made from two solid substances X and Y.

Solid	Electrical conductivity in solid	Solubility in water	Boiling point
X	Poor	Insoluble	Sublimes

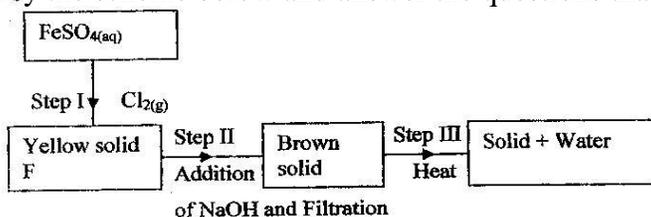
Y	Poor	Soluble	High
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a) State the most likely type of bonding in

(i) Solid X (1mk)

(ii) Solid Y (1mk)

23. Study the scheme below and answer the questions that follow



i) Write down the formula of the yellow solid F. (1MK)

ii) What property of Chlorine is shown in step III

iii) Write an equation for the reaction which occurs in step in step III

24. a) Give the observation made when ammonia gas passed over hot platinum wire in the presence of Oxygen gas. (1mk)

b) Write chemical equation (s) for the reactions taking place in (a) above

c) When excess ammonia solution is added to a solution of copper (ii) ions, deep blue solution forms. Write the formula of the complex ions formed. (1mk)

25. A heavy metal B was dissolved in dilute nitric acid to form a solution of compound B(NO₃)₂. 2 portions of the resulting solution were treated as follows:

a. To the first portion of dilute hydrochloric acid is added, where a white precipitate (S) is formed, which dissolves on warming.

b. The second portion is treated with two drops of 2 M sodium hydroxide solution where a white precipitate T is formed. The white precipitate dissolved in excess sodium hydroxide to form a colorless solution.

c. A solution of potassium iodide is added to the third portion where a yellow precipitate (U) is formed.

d. When the resulting solution s evaporates to dryness and heated strongly a yellow solid (V)

Identify the substances

(3mks)

P S T V U W

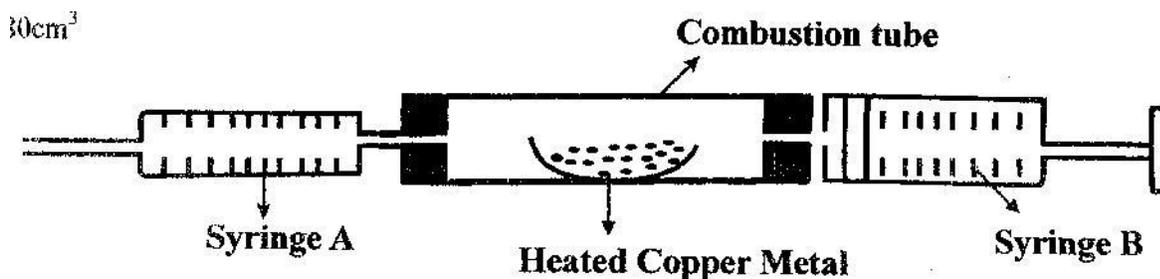
Write an ionic equation of the reaction that occurs in part (c)

26. A student from Sinapanga Village fetched water from a pond. He used part of it to wash his uniform using bar soap where it took him a lot of time to produce lather for the process. He

boiled part of the remaining water for drinking .On washing his hands using some of the boiled water; he noted that it lathered very easily with the same bar soap.

- Identify the type of water hardness in the water she used. Explain (2mk)
- State the ions that cause the hardness you have mentioned above
- State tow advantages if water hardness

27. 100cm³ of air is continuously pass through a combustion tube connected to two syringes as shown below. The combustion tube contains some clean granules of copper metal which are heated. The process is repeated until there is no further change in the volume of air. The volume of air remaining is 80cm³.



- State one observation made in the combustion tube
- Work out the percentage of air used after the reaction
- List two gases remaining after the reaction

28. The electronic configuration of the ions of X³⁺ and Y²⁻ are 2,8 and 2,8 respectively.

- Write the electronic configuration of the neutral atoms of X and Y (1 mk)
- Write the formula of the compound formed between element X and Oxygen (1mk)
- Compare the atomic radius of element X and Y (1mk)