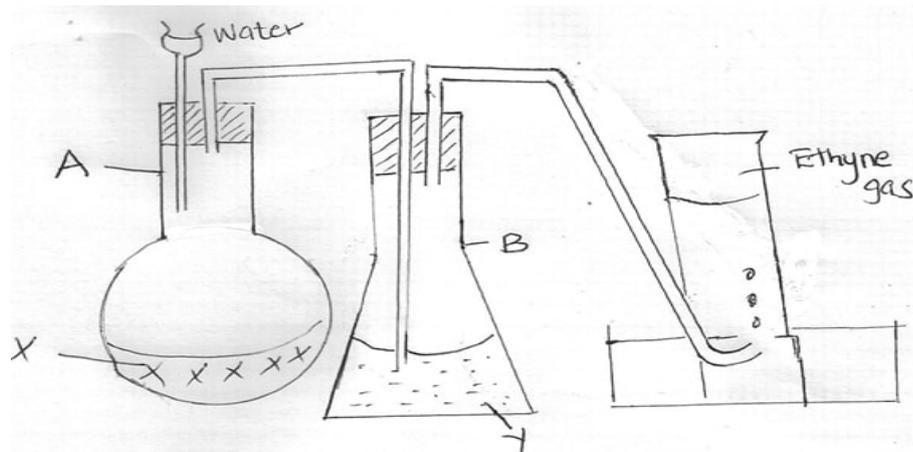


CHEMISTRY PAPER 1 - 2019 KCSE Prediction Questions Set 2**INSTRUCTIONS**

- Answer all the questions
- All working must be shown clearly where necessary
- Mathematical tables and silent non-programmable electronic calculators may be used
- Candidates must answer the questions in English.
- Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

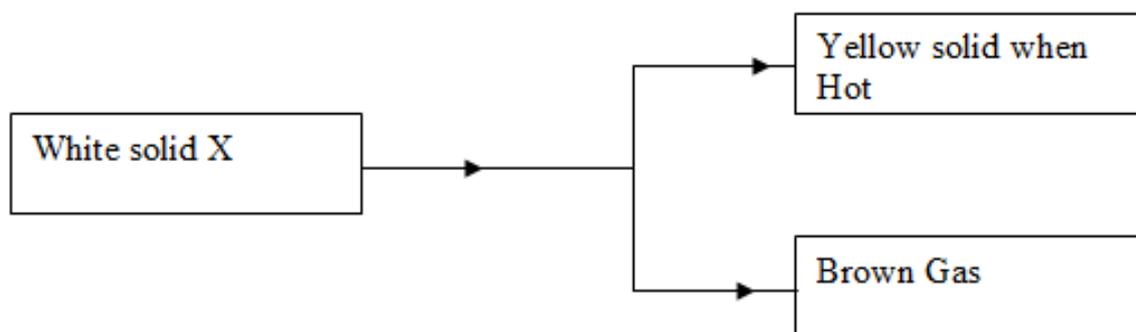
- An element T has an atomic number 12.
 - Write the formula of the nitride of T. (1mk)
 - What type of bond is formed between T and Nitrogen (1mk)
- Ethanol has a lower molecular mass than butane.
Explain why ethanol is a liquid and butane is a gas at room temperature (2mks)
- The set up below shows how a pure sample of Ethyne gas is prepared in the laboratory



- Identify substances (1mk)

X _____

Y _____
 - Write down a chemical equation for the reaction that takes place in flask A (1mk)
- A gas occupies 500cm^3 at a temperature of 27°C and 760mmHg pressure. Calculate its volume when pressure is doubled and temperature raised to 40°C . (3mks)
 - Chlorine gas is bubbled through Iron (II) sulphate solution.
 - Explain the observations made (2mks)
 - Write an ionic equation for the reaction that occurs (1mk)
 - Study the scheme below and answer questions that follow



CHEMISTRY PAPER 1 Marking Scheme - 2019 KCSE Prediction Answers Set 2

1.
 - a. T_3N_2 ✓1
 - b. Ionic bond ✓1
2. Ethanol forms hydrogen bond ✓1 while butane has no ✓1 hydrogen bond
3.
 - a. X Calcium Carbide / CaC_2 ✓½
Y Copper (II) sulphate ✓½
 - b. $CaC_{2(s)} + 2H_2O_{(l)} \rightarrow C_2H_{2(g)} + Ca(OH)_{2(aq)}$
- 4.
5. Iron (II) sulphate change from green to yellow / brown ✓1 iron (iii) sulphate
Chlorine oxidizes Iron (ii) ions to Iron (iii) ions ✓1
 $Fe^{2+} + Cl$
6.
 - a. Cations Zn^{2+} ✓½
Anion NO_3^- ✓½
 - b. $2HCl_{(aq)} + ZnO_{(s)} \rightarrow ZnCl_{2(aq)} + H_2O_{(l)}$ ✓1
7. SiO_2 form giant atomic structure ✓½
 SO_2 simple molecular structure ✓½
Giant atomic structure requires strong heating to break ✓1
8. Heat the mixture and collect NH_4Cl ✓½ in a cold surface. Add water ✓½ to the remaining mixture stir then filter. Obtain filtrate ✓½ Na_2CO_3 and residue ✓½ as $CaCO_3$. Heat filtrate ✓½ in a water bath to saturation and allow it to crystallize. ✓½
9.
 - a. $MnO_4^- = -1$
 $x + -2(4) = -1$ ✓1
 $x - 8 = -1$
 $x = 7$ ✓1
 - b. MnO_4^- ✓1
Oxidation number of manganese changes from +7 to +2 ✓1
10.
 - a. Iron (iii) chloride / $FeCl_3$ ✓1
 - b. $2Fe_{(s)} + 3Cl_{(g)} \rightarrow 2FeCl_{3(s)}$ ✓1
11.
 - a. Non metallic ✓1
Ionic radius is higher than the atomic radius ✓1
 - b. $Y < X < Z < W$ ✓1
12.
 - a. $Mg^{2+} + 2e^- \rightarrow Mg$ -2.36 ✓1
 $Ag^+ + e^- \rightarrow Ag$ +0.80 ✓1
Or
 $Mg_{(s)} / Mg^{2+}(aq) // Ag^+(aq) / Ag_{(s)}$ ✓1
 - b. Ered - Eox
 $0.80 v - -2.36$ ✓1
 $3.16v$ ✓1
13. It reacts with ammonia to form Ammonium Sulphate ✓1