**NAME: ------------------------------------------------: CLASS-----------:ADM.No-------**

**KAHUHO UHURU HIGH SCHOOL**

**FORM 4: CHEMISTRY**

**TUNE-UP EXAM**

**TERM 2: 2014**

**TIME: 1 HOUR**

**INSTRUCTION**

**Answer ALL questions in this paper in the spaces provided**

1. (b) Describe how a pure sample of lead (II) sulphate can be prepared in the laboratory starting with lead metal. (2 marks)
2. What is meant by the term ‘Enthalpy of formation’? (1 mark)

(ii) The enthalpies of combustion of carbon, methane and hydrogen are indicated below:

C(s) + O2 (g) CO2 (g); ΔH = -393 kJ mol-1

H2 (g) + 2O2 (g) H2O *(l)*; ΔH = -286 kJ mol-1

Enthalpy of combustion of CH4 = -890 kJ mol-1

1. Draw an energy cycle diagram that links the enthalpy of formation of

Methane to enthalpies of combustion of carbon, hydrogen and methane (2mks)

1. Determine the enthalpy of formation of methane (2mks)
2. The molar enthalpy of neutralization between hydrochloric acid and ammonia solution was found to be -52.2 kJ mol-1 while that of hydrochloric acid and sodium hydroxide was -57.1 kJ mol-1. Explain the difference in these values. (2mks)
3. In terms of structure and bonding, explain the following observations:
4. The melting point of aluminium is higher than that of sodium (2mks)
5. Melting point of chlorine is lower than that of sulphur (2mks)
6. (a) State the Charles law (1mk)
7. A certain mass of a gas occupies 146 dm3 at 291k and 93.31kPa .What will be its temperature if its volume is reduced to 133dm3 at 101.325 kPa (3mks)

6.(a) Diamond and graphite are allotropes of carbon. What is meant by an allotrope (1mk)

1. Explain why graphite can be used as a lubricant while diamond cannot (2mks)
2. A solution was made by dissolving 8.2g of calcium nitrate to give 2 litres of solution . Determine the concentration of nitrate ions in moles per litre(3mks)
3. A chloride of sulphur was found to have a relative molecular mass of 135.A 10.8g sample of the chloride was found to contain 5.68g of chlorine. Determine the molecular formula of the chloride (3mks)
4. Explain why noble gases are generally unreactive (2mks)
5. State and illustrate the bond type in each of the following compounds.
6. Calcium fluoride (3mks)
7. Methane (2mks)
8. Molten magnesium chloride conducts electricity whereas solid magnesium chloride does not.Explain (2mks)
9. In terms of structure and bonding , explain why water is a liquid at room temperature while hydrogen sulphide is a gas. (2mks)
10. State two properties of carbon(IV) oxide that makes it suitable for putting off petrol fires. (2mks)
11. Distinguish between a covalent bond and a dative bond (2mks)
12. Nitrogen gas is less reactive compared to oxygen. Explain (2mks)
13. Explain the following :
14. Nitric(V) acid is usually kept in dark-brown bottles (2mks)
15. Nitric (V) Acid is often yellow in colour (1mk)
16. Chlorine is collected by upward displacement of air. Explain (2mks)
17. Explain why no gas is produced when dilute sulphuric(VI) acid is added to copper turnings. (2mks)