LAVINGTON GIRLS SECONDARY SCHOOL

Holiday assignment

Chemistry

Name……………………………………………Adm no. ………cstream

When 34.8g of hydrated sodium carbonate (Na 2 CO3 XH 2 O) were heated to a constant mass. 15.9g of anhydrous sodium carbonate were obtained. Calculate the value of x in the hydrated carbonate. (Na=23.0, O=16.0, C=12.0, H=1) (3mks)

2. Determine the empirical formula of a compound made up of carbon and hydrogen only. Given that the percentage of carbon in the compound is 79.9% (C-12.0,11-1.0 (3 marks)

3. A compound has an empirical formula. C3H6O and a relative formula mass of 116.

a) Determine its molecular formula. (H=1.0, C=12.0, O=16.0) (2 marks)

b). Calculate the percentage composition of carbon by mass in the compound. (1 m

4. On complete combustion of a sample of a hydrocarbon, 3.52g of carbon dioxide and 1.44g of water were formed. Determine the molecular formula of the hydrocarbon. (Relative molecular masses of hydrocarbon = 56, carbon dioxide = 44, water = 18 and relatives atomic masses H=1.0, and C=12.0). (4 marks).

5. (a) An organic compound P contains 64.9% carbon, 13.5% hydrogen and 21.6% oxygen. The relative formula mass of P is 74. Given that C=12.0, H=1.0, O=16.0

(i) Determine the empirical formula of P. (3 marks)

(ii) Determine the molecular formula of P.

6. An element H consists of isotopes of masses 10 and 11 with a percentage composition of 18.7% and 81.3% respectively. Determine the relative atomic mass of H. (2 marks)

7. a). 0.318g of an oxide metal M was completely reduced by hydrogen gas to 0.254g of metal. Calculate the empirical formula of the metal oxide (M = 63.5, O = 16.0)

8. Calculate the relative formula mass of gas A given that the time taken for equal volumes of oxygen to diffuse through the use same hole is 20 seconds and 24 seconds respectively (O=16.0) (2 marks)

9.(a) State the Charles law

b) The volume of a sample of nitrogen gas at a temperature of 291 K and 1.0×10^5 Pascal's was 3.5×10^{-2} m 3 . Calculate the temperature at which the volume of the gas would be 2.8×10^{-2} m 3 at 1.0×10^5 Pascal. (2marks)