

HOLIDAY ASSIGNMENT TERM I - 2020

CHEMISTRY FORM 3

1. 50 kg of ammonium sulphate $(\text{NH}_4)_2\text{SO}_4$ and 30 kg of urea $\text{CO}(\text{NH}_2)_2$ fertilizers were applied in two equal sizes of plots A and B to enrich their nitrogen content. Show by working, which plot was more enriched with nitrogen. (N = 14; S = 32; O = 16; C = 12; H = 1). (3 marks)

[2011 PP1 No. 19]

2. (a) State the Gay Lussac's Law. (1 mark)

(b) 10cm^3 of a gaseous hydrocarbon, C_2H_x required 30cm^3 of oxygen for complete combustion. If steam and 20cm^3 of carbon (IV) oxide were produced, what is the value of x? (2 marks)

[2011 PP1 No. 25]

3. The data given below was recorded when metal M was completely burnt in air. M is not the actual symbol of the metal. (R.A.M; M = 56; O = 16)

Mass of empty crucible and lid = 10.240 g

Mass of crucible, lid and metal M = 10.352g

Mass of crucible, lid and metal oxide = 10.400g

(a) Determine the mass of :

(i) metal M;

(ii) oxygen

(1 mark)

(b) Determine the empirical formula of the metal oxide.

(2 marks)

[2011 PP1 No. 26]

4. 10cm^3 of concentrated sulphuric (VI) acid was diluted to 100cm^3 . 10cm^3 of the resulting solution was neutralized by 36cm^3 of 0.1 M sodium hydroxide solution. Determine the mass of sulphuric (VI) acid that was in the concentrated acid.

(S = 32.0; H = 1.0; O = 16.0)

(3 marks)

[2012 PP1 No. 8]

5. The empirical formula of A is CH_2Br . Given that 0.470g of A occupies a volume of 56cm^3 at 546K and 1 atmospheric pressure, determine its molecular formula.

(H = 1.0, C = 12.0, Br = 80.0, molar gas volume at STP = 22.4 dm^3).

(3 marks)

[2012 PP1 No. 11]

6. Describe how the percentage of mass of copper in copper carbonate can be determined.

(3 marks)

[2012 PP1 No. 23]

7. Describe how a solid sample of potassium sulphate can be prepared starting with 200cm^3 of 2M potassium hydroxide.

(3 marks)

[2012 PP1 No. 25]

8. When 15cm^3 of a gaseous hydrocarbon P, was burnt in 100cm^3 of oxygen, the resulting gaseous mixture occupied 70cm^3 at room temperature and pressure. When the gaseous mixture was passed through potassium hydroxide solution, its volume decreased to 25cm^3 .

(a) What volume of oxygen was used during the reaction?

(1 mark)

(b) Determine the molecular formula of the hydrocarbon.

(2 marks)

[2013 PP1 No. 23]

9. A solution was made by dissolving 8.2g of calcium nitrate to give 2 litres of solution. (Ca = 40.0; N = 14.0; O = 16.0)

Determine the concentration of nitrate ions in moles per litre.

(3 marks)

[2013 PP1 No. 24]