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XI-STANDARD CHEMISTRY IMPORTANT 5 -MARK FOR LESSONWISE

1.CHEMICAL CALCULATION

Problems are compulsory for 2 & 3 mark questions

1. Explain chloride method
2. Explain oxide method
3. Explain assigning rules of oxidation number
4. Explain victor-Mayer's process (Without calculation)
5. Explain Redox reaction
6. Explain chemical equation balancing
7. Explain What is Reduction and Oxidation reactions
8. A compound on analysis gave the following percentage composition C = 54.54%, H, 9.09% O = 36.36. The vapour density of the compound was found to be 44. Find out the molecular formula of the compound.
9. A compound on analysis gave the following percentage composition: Na=14.31% S = 9.97%, H = 6.22%, O = 69.5%, calculate the molecular formula of the compound on the assumption that all the hydrogen in the compound is present in combination with oxygen as water of crystallisation. Molecular mass of the compound is 322 [Na = 23, S = 32, H = 1, O = 16].
10. 4.5g of urea (molar mass = 60g mol^{-1}) are dissolved in water and solution is made to 100 ml in a volumetric flask. Calculate the molarity of solution.
11. Calculate the normality of solution containing 3.15g of hydrated oxalic acid ($\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$) in 250ml of solution (Mol.mass = 126).
12. Calculate the molality of an aqueous solution containing 3.0g of urea (mol.mass=60) in 250g of water
13. 0.548 g of the metal reacts with dilute acid and liberates 0.0198 g of hydrogen at S.T.P. Calculate the equivalent mass of the metal. Calculate the equivalent mass of the metal 0.635 g of a metal gives on oxidation 0.795g g of its oxide
14. Calculate molecular mass by Victor-Meyer's Method .0.790 g of a volatile liquid displaced $1.696 \times 10^{-4}\text{m}^3$ of moist air at 303 K and at $1 \times 10^5 \text{Nm}^{-2}$ pressure. Aqueous tension at 303 K is $4.242 \times 10^3 \text{Nm}^{-2}$. Calculate the molecular mass and vapour density of the compound.
15. Calculate the formula weight of each of the following to three significant figures, using a table of atomic weight (AW): (a) chloroform CHCl_3 (b) Iron (III) sulfate $\text{Fe}_2(\text{SO}_4)_3$.
16. H_2O_2 is a colourless liquid. A concentrated solution of it is used as a source of oxygen for Rocket propellant fuels. Dilute aqueous solutions are used as a bleach. Analysis of a solution shows that it contains 0.909 mol H_2O_2 in 1.00 L of solution. What is the mass of H_2O_2 in this volume of solution?
17. Boric acid, H_3BO_3 is a mild antiseptic and is often used as an eye wash. A sample contains 0.543 mol H_3BO_3 . What is the mass of boric acid in the sample?
18. CS_2 is a colourless, highly inflammable liquid used in the manufacture of rayon and cellophane. A sample contains 0.0205 mol CS_2 . Calculate the mass of CS_2 in the sample

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19. A substance on analysis, gave the following percentage composition, Na = 43.4%, C = 11.3%, O = 43.3% calculate its empirical formula [Na = 23, C = 12, O = 16].
20. What is the simplest formula of the compound which has the following percentage composition: Carbon 80%, hydrogen 20%.
21. A compound on analysis gave the following percentage composition: C - 54.54%, H = 9.09%, O = 36.36%
22. An organic compound was found to have contained carbon = 40.65%, hydrogen = 8.55% and Nitrogen = 23.7%. Its vapour - density was found to be 29.5. What is the molecular formula of the compound?
23. A compound contains 32% carbon, 4% hydrogen and rest oxygen. Its vapour density is 75. Calculate the empirical and molecular formula.
24. An acid of molecular mass 104 contains 34.6% carbon, 3.85% hydrogen and the rest is oxygen. Calculate the molecular formula of the acid.
25. What is the simplest formula of the compound which has the following percentage composition: carbon 80%, Hydrogen 20%, If the molecular mass is 30, calculate its molecular formula
26. Calculate the oxidation number of underlined elements in the following species.
- a) MnSO₄ b. S₂O₃ c. HNO₃ d. K₂MnO₄ e. NH₄



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