18. Saline solution is prepared by dissolving 9.0 g of NaCl in deionized water in a 500 ml volumetric flask. Calculate the molarity of the solution.

    A. 3.07 M   C. 0.307 M

    B. 30.07 M   D. 7.03 M

19. Given equations below:

$$S_2O_8^{2-} + 2e \rightarrow 2SO_4^{2-}$$
$$Mn^{2+} + 4H_2O \rightarrow MnO_4^- + 8H^+ + 5e$$

How many mole of $S_2O_8^{2-}$ are needed to oxidise 20mL, 0.2 M Mn^{2+}?

    A. 4×10^{-3} mol   C. 1×10^{-2} mol

    B. 1×10^{-3} mol   D. 2×10^{-2} mol

20. A compound has an molecular formula of $C_4H_5ON_2$. Chose the **correct** statement.

    I. The weight percentage of Hydrogen is 10.15%
    II. The number of Nitrogen atoms is 1.204×10^{24}
    III. The weight percentage of Carbon is 49.48%

    A. I only   C. I and III

    B. I and II   D. II and III

21. The label on the bottle of concentrated nitric acid solution is 37.4% HNO_3 by weight and density 1.18g/mL. Determine mole fraction of HNO_3.

    A. 0.374   C. 0.598

    B. 0.171   D. 0.146

22. NaCl solution was prepared by using 0.25 mol of NaCl and 250 mL of water. Determine the molality of the solution with a density 1.509 g/mL.

    A. 0.663 m   C. 0.0663 m

    B. 0.689 m   D. 0.000689 m

23. In an experiment, 30g aluminium reacts with 100g Br_2 to form aluminium bromide, $AlBr_3$. What is the percentage yield for the reaction if only 55g of $AlBr_3$ were produced at the end of the experiment?

    A. 18.57 %   C. 49.45%

    B. 20.22%   D. 42.30%

24. Based on balance equation below, determine the number of mole of excess reactant remained at the end of the reaction if 90.0 g of CuO is heated with 150.0 g Cu_2S.

$$2CuO\,(s) + Cu_2S(s) \rightarrow 4Cu\,(s) + SO_2(g)$$

    A. 0.375 mol   C. 0.565 mol

    B. 1.13 mol   D. 0.190 mol

25. The density of 10.5 molal NaOH is 1.33 g/mL. Calculate percentage by mass of NaOH.

    A. 12.67%   C. 29.57%

    B. 75.18%   D. 8.64%

26. A 3.2 molal solution contains 285 g of solvent. What is the molality of the solution after dilution with an additional 140 g of solvent?

    A. 4.32 m   C. 2.15 m

    B. 1.46 m   D. 3.50 m

27. 10 cm^3 of ammonia solution, NH_3 with density 0f 0.93 g/cm^3 contains 0.45 g of NH_3 solute. What is the percentage by mass of this solution?

    A. 4.18   C. 2.22

    B. 4.84   D. 4.20