

Date Planned : __ / __ / __	Daily Tutorial Sheet - 4	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 1	Exact Duration : _____

46. Calculate the molality (m) of 3M solution of NaCl whose density is 1.25 g mL^{-1} .
(A) 1.5 m **(B)** 1.8 m **(C)** 2.0 m **(D)** 2.79 m
47. Find the number of g atoms and weight of an element having 2×10^{23} atoms. Atomic mass of element is 32.
(A) 0.22g atom, 9.2 g **(B)** 0.22g atom, 8.2 g
(C) 0.33g atom, 10.6 g **(D)** 0.33g atom, 9.6g
48. 0.05 g of a piece of metal in dilute acid gave 24.62 mL of H_2 at 27°C and 760 mm pressure. The equivalent weight of metal is: ▶
(A) 25 **(B)** 12.5 **(C)** 50 **(D)** 37.5
49. For the reaction, $\text{X} + 2\text{Y} \longrightarrow \text{Z}$
5 moles of X and 9 moles of Y will produce:
(A) 5.5 moles of Z **(B)** 8.5 moles of Z **(C)** 14.5 moles of Z **(D)** 4.5 moles of Z
50. In the following reaction, $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$ ▶
2 mole MnO_2 reacts with 4 mol of HCl to form 11.2 L Cl_2 at STP. Thus, percentage yield of Cl_2 is:
(A) 25% **(B)** 50% **(C)** 100% **(D)** 75%
51. What is the number of moles of $\text{Fe}(\text{OH})_3(\text{s})$ that can be produced by allowing 1 mole of Fe_2S_3 , 2 moles of H_2O and 3 moles of O_2 to react as : $2\text{Fe}_2\text{S}_3 + 6\text{H}_2\text{O} + 3\text{O}_2 \longrightarrow 4\text{Fe}(\text{OH})_3 + 6\text{S}$?
(A) 1 mol **(B)** 1.84 mol **(C)** 1.34 mol **(D)** 1.29 mol
52. Two elements X (at. wt. 75) and Y (at. wt. 16) combine to give a compound having 75.8% of X. The formula of compound will be: ▶
(A) XY **(B)** X_2Y **(C)** XY_3 **(D)** X_2Y_3
53. One atom of an element weighs $1.8 \times 10^{-22}\text{g}$. Its atomic mass is:
(A) 29.9 **(B)** 18 **(C)** 108.36 **(D)** 154
54. The reaction of calcium with water is represented by the equation,
 $\text{Ca} + 2\text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$
What volume of H_2 at STP would be liberated when 8g of calcium completely reacts with water?
(A) 4480 cm^3 **(B)** 2240 cm^3 **(C)** 1120 cm^3 **(D)** 0.4 cm^3
55. NO reacts with O_2 to form NO_2 . When 10g of NO_2 is formed during the reaction, the mass of O_2 consumed is: ▶
(A) 1.90 g **(B)** 5.0 g **(C)** 3.48 g **(D)** 13.9 g
56. Equal weights of Zn metal and iodine are mixed together and I_2 is completely converted to ZnI_2 . What fraction by weight of original Zn remains unreacted? ($\text{Zn} = 65$, $\text{I} = 127$) ▶
(A) 0.34 **(B)** 0.74 **(C)** 0.84 **(D)** Unable to predict
57. The number of moles of oxygen in one litre of air containing 21% oxygen by volume, in standard condition, is: ▶
(A) 0.186 mol **(B)** 0.21 mol **(C)** 2.10 mol **(D)** 0.0093 mol

58. Which of the following has maximum mass?
- (A) 0.1 moles of ammonia (B) 1120 cc of carbon dioxide at STP
(C) 0.1g atom of carbon (D) 6.02×10^{22} molecules of H_2 gas
59. A mixture containing Na_2CO_3 , NaOH and inert matter weighs 0.75 g. When the aqueous solution is titrated with 0.50 N HCl, the colour of the phenolphthalein disappears when 21.00 mL of the acid has been added. Methyl orange is then added and 7.00 mL more of the acid is required to give a red colour to the solution. The % of Na_2CO_3 is: 
- (A) 49.5 (B) 24.5 (C) 37.1 (D) None of these
- *60. 40g NaOH, 106g Na_2CO_3 and 84g $NaHCO_3$ is dissolved in water and the solution is made 1 litre. 20 mL of this stock solution is titrated with 1N HCl, hence which of the following statements is/are correct? 
- (A) the titre reading of HCl will be 40 mL, if phenolphthalein is used indicator from the very beginning
(B) the titre reading of HCl will be 60 mL if phenolphthalein is used indicator from the very beginning
(C) the titre reading of HCl will be 40 mL if the methyl orange is used indicator after the 1st end point
(D) the titre reading of HCl will be 80 mL, if methyl orange is used as indicator from the very beginning