

Date Planned : __ / __ / __	Daily Tutorial Sheet - 13	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 3	Exact Duration : _____

- 147.** The waste of nuclear power plant contains C^{12} and C^{14} in the ratio of 4 : 1 by moles. What is the molecular mass of methane gas produced from this disposed waste? Given that the natural abundance of C^{12} and C^{14} are 98% and 2%, respectively.
- (A) 15.998 (B) 16.0053 (C) 16 (D) 16.4
- 148.** Nitrogen (N), phosphorus (P) and potassium (K) are the main nutrients in plant fertilizers. According to an industry convention, the numbers on the label refer to the mass percent of N, P_2O_5 and K_2O , in that order. What is N : P : K ratio of a 30 : 10 : 10 fertilizer in terms of moles of each element, expressed as x : y : 1.0 ? (N = 14, P = 31, K = 39)
- (A) 10 : 0.66 : 1.0 (B) 20 : 0.66 : 1.0 (C) 8.4 : 1.3 : 1.0 (D) 16.8 : 1.3 : 1.0
- 149.** A certain mixture of MnO and MnO_2 contains 66.67 mol percent of MnO. What is the approximate mass percent of Mn in it? (Mn = 55)
- (A) 66.67 (B) 75 (C) 72 (D) 80
- 150.** A sample of impure cuprous oxide contains 66.67% copper, by mass. What is the percentage of pure Cu_2O in the sample?
- (A) 66.67 (B) 75 (C) 70 (D) 80
- 151.** Sodium bicarbonate, $NaHCO_3$, can be purified by dissolving it in hot water ($60^\circ C$), filtering to remove insoluble impurities, cooling to $0^\circ C$ to precipitate solid $NaHCO_3$, and then filtering to remove the solid, leaving soluble impurities in solution. Any $NaHCO_3$ that remains in the solution is not recovered. The solubility of $NaHCO_3$ in hot water at $60^\circ C$ is 164 g/litre and is 69 g/litre in cold water at $0^\circ C$. What is the percentage yield of $NaHCO_3$, when it is purified by this method?
- (A) 58 (B) 42.07 % (C) 69 % (D) 31%
- 152.** The mineral haematite is Fe_2O_3 . Haematite ore contains unwanted material called gangue in addition to Fe_2O_3 . If 5 kg of ore contains 2.78 kg of Fe, what percentage of gangue in ore is? (Fe = 56)
- (A) 55.6% (B) 44.4% (C) 20.6 % (D) 79.4%