

## Sequential and Parallel Reactions

101. What mass of carbon disulphide,  $\text{CS}_2$  can be completely oxidized to  $\text{SO}_2$  and  $\text{CO}_2$  by the oxygen liberated when 325 g of  $\text{Na}_2\text{O}_2$  react with water?
- (a) 316.67 g (b) 52.78 g  
(c) 633.33 g (d) 211.11 g
102. An amount of 2 moles  $\text{KClO}_3$  is decomposed completely to produce  $\text{O}_2$  gas. How many moles of butane,  $\text{C}_4\text{H}_{10}$  can be burnt completely by the  $\text{O}_2$  gas produced?
- (a) 0.5 (b) 1.0  
(c) 2.0 (d) 3.0
103. On heating  $\text{KClO}_3$  at a certain temperature, it is observed that one mole of  $\text{KClO}_3$  yields one mole of  $\text{O}_2$ . What is the mole fraction of  $\text{KClO}_4$  in the final solid mixture containing only  $\text{KCl}$  and  $\text{KClO}_4$ , the latter being formed by the parallel reaction?
- (a) 0.50 (b) 0.25  
(c) 0.33 (d) 0.67
104. When 12 g graphite is burnt in sufficient oxygen,  $\text{CO}$  as well as  $\text{CO}_2$  is formed. If the product contains 40%  $\text{CO}$  and 60%  $\text{CO}_2$  by mass and none of the reactant is left, what is the mass of oxygen gas used in combustion?
- (a) 24.0 g (b) 21.33 g  
(c) 23.8 g (d) 15.6 g
105. A mixture of 254 g of iodine and 142 g of chlorine is made to react completely to give a mixture of  $\text{ICl}$  and  $\text{ICl}_3$ . How many moles of each product are formed? (I = 127, Cl = 35.5)
- (a) 0.1 mol of  $\text{ICl}$  and 0.1 mol of  $\text{ICl}_3$   
(b) 1.0 mol of  $\text{ICl}$  and 1.0 mol of  $\text{ICl}_3$   
(c) 0.5 mol of  $\text{ICl}$  and 0.1 mol of  $\text{ICl}_3$   
(d) 0.5 mol of  $\text{ICl}$  and 1.0 mol of  $\text{ICl}_3$
- 

## Percentage Based

106. A quantity of 4.35 g of a sample of pyrolusite ore, when heated with conc.  $\text{HCl}$ , gave chlorine. The chlorine, when passed through potassium iodide solution, liberated 6.35 g of iodine. The percentage of pure  $\text{MnO}_2$  in the pyrolusite ore is (Mn = 55, I = 127)
- (a) 40 (b) 50  
(c) 60 (d) 70
107. How many grams of 90% pure  $\text{Na}_2\text{SO}_4$  can be produced from 250 g of 95% pure  $\text{NaCl}$ ?
- (a) 640.6 g (b) 288.2 g  
(c) 259.4 g (d) 320.3 g
108. A quantity of 10 g of a piece of marble was put into excess of dilute  $\text{HCl}$  acid. When the reaction was complete,  $1120 \text{ cm}^3$  of  $\text{CO}_2$  was obtained at  $0^\circ\text{C}$  and 1 atm. The percentage of  $\text{CaCO}_3$  in the marble is
- (a) 5%  
(b) 25%  
(c) 50%  
(d) 2.5%
109. A 1.50 g sample of potassium bicarbonate having 80% purity is strongly heated. Assuming the impurity to be thermally stable, the loss in weight of the sample, on heating, is
- (a) 3.72 g  
(b) 0.72 g  
(c) 0.372 g  
(d) 0.186 g