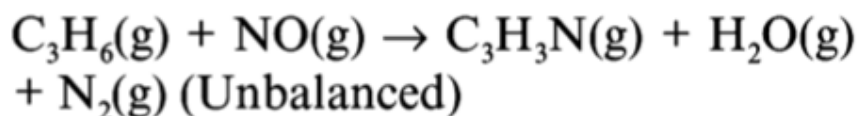


91 A compound contains equal masses of the elements A, B and C. If the atomic masses of A, B and C are 20, 40 and 60, respectively, the empirical formula of the compound is

- (a) A_3B_2C
 - (b) AB_2C_3
 - (c) ABC
 - (d) $A_6B_3C_2$
-

92 Acrylonitrile, C_3H_3N , is the starting material for the production of a kind of synthetic fibre (acrylics). It can be made from propylene, C_3H_6 , by reaction with nitric oxide, NO.



How many grams acrylonitrile may be obtained from 420 kg of propylene and excess NO?

- | | |
|-------------|------------|
| (a) 265 kg | (b) 530 kg |
| (c) 1060 kg | (d) 795 kg |
-

93 A quantity of 2.76 g of silver carbonate on being strongly heated yields a residue weighing ($Ag = 108$)

- | | |
|------------|------------|
| (a) 2.16 g | (b) 2.48 g |
| (c) 2.32 g | (d) 2.64 g |

84 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
-


85 Two successive reactions, $A \rightarrow B$ and $B \rightarrow C$, have yields of 90% and 80%, respectively. What is the overall percentage yield for conversion of A to C?

- (a) 90%
 - (b) 80%
 - (c) 72%
 - (d) 85%
-

86 Two isotopes of an element Q are Q^{97} (23.4% abundance) and Q^{94} (76.6% abundance). Q^{97} is 8.082 times heavier than C^{12} and Q^{94} is 7.833 times heavier than C^{12} . What is the average atomic weight of the element Q?

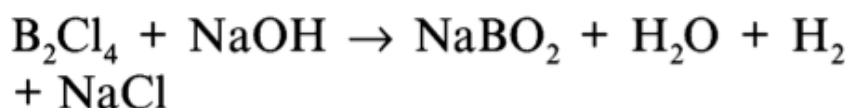
- (a) 94.702
 - (b) 78.913
 - (c) 96.298
 - (d) 94.695
-

87 A certain mixture of MnO and MnO_2 contains 66.67 mol per cent of MnO . What is the approximate mass per cent of Mn in it? ($Mn = 55$)

- (a) 66.67
 - (b) 24.02
 - (c) 72.05
 - (d) 69.62
- 

- 98 A sample of impure cuprous oxide contains 66.67% copper, by mass. What is the percentage of pure Cu_2O in the sample? ($\text{Cu} = 63.5$)
- (a) 66.67 (b) 75
(c) 70 (d) 80
-

- 99 Diborane tetrachloride was treated with NaOH and the following reaction occurred:



If 1362 ml of hydrogen gas is formed at STP, how much B_2Cl_4 was consumed? ($\text{B} = 11$)

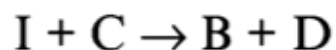
- (a) 9.97 g (b) 9.84 g
(c) 0.0968 g (d) 23.57 g
-

- 910 What total volume, in litre at 727°C and 1 atm, could be formed by the decomposition of 16 g of NH_4NO_3 ?
Reaction: $2\text{NH}_4\text{NO}_3 \rightarrow 2\text{N}_2 + \text{O}_2 + 4\text{H}_2\text{O}(\text{g})$.

- (a) 57.47 l (b) 114.94 ml
(c) 41.78 l (d) 24.63 l
-

- 911 A sample of chalk contained as impurity a form of clay which losses 14.5% of its weight as water on strong heating. A 5 g of chalk sample, on heating, shows a loss in weight by 1.507 g. The mass percentage of CaCO_3 in the chalk sample is ($\text{Ca} = 40$)

Q12 An amount of 5 moles of A, 6 moles of B and excess amount of C are mixed to produce a final product D, according to the reactions:



What is the maximum moles of D, which can be produced assuming that the products formed can also be reused in the reactions?

- (a) 3 moles
- (b) 4.5 moles
- (c) 5 moles
- (d) 6 moles