

Comprehension XII

A volume of 18 ml of a gaseous mixture consisting of a gaseous organic compound, A, and just sufficient amount of oxygen required for complete combustion yielding on burning 8 ml of CO_2 , 12 ml of water vapour and 4 ml of N_2 . All volumes are measured at the same temperature and pressure. The compound A contains only carbon, hydrogen and nitrogen.

34. How many volumes of oxygen are required for complete combustion?
- (a) 4 ml
 - (b) 14 ml
 - (c) 7 ml
 - (d) 11 ml
35. What is the molecular formula of the compound?
- (a) CH_5N
 - (b) $\text{C}_2\text{H}_5\text{N}$
 - (c) $\text{C}_2\text{H}_6\text{N}_2$
 - (d) $\text{C}_4\text{H}_{10}\text{N}_2$
36. What volume of H_2 gas, measured at the same temperature and pressure, is needed for complete reduction of the same volume of compound A?
- (a) 4 ml
 - (b) 8 ml
 - (c) 28 ml
 - (d) 14 ml
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Comprehension XIII

A mixture of CH_4 , C_2H_4 and C_2H_2 has a vapour density of 11.3 ml. When 10 ml of this mixture and 30 ml of oxygen are sparked together over aqueous KOH, the volume contracts to 5.5 ml and then disappears when pyrogallol is introduced. All volumes are measured under identical conditions of temperature, pressure and humidity.

37. What was the volume ratio of CH_4 , C_2H_4 and C_2H_2 in the original gaseous mixture?
- (a) 2:2:3
 - (b) 3:3:4
 - (c) 4:3:3
 - (d) 1:1:3
38. If the mixture were not sparked over aqueous KOH, what was the total volume of resulting gases after sparking?
- (a) 5.5 ml
 - (b) 25.5 ml
 - (c) 24.5 ml
 - (d) 21.5 ml
39. If the reactions were performed at 0°C and 1 atm, what should be the minimum mass of KOH present in the solution for complete conversion into K_2CO_3 ?
- (a) 0.08 g
 - (b) 0.04 g
 - (c) 80 g
 - (d) 40 g
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