

58. A gaseous mixture contains 40% H₂ and 60% He, by volume. What is the total number of moles of gases present in 10 g of such mixture?
 (a) 5 (b) 2.5
 (c) 3.33 (d) 3.125
59. A sample of ozone gas is found to be 40% dissociated into oxygen. The average molecular mass of sample should be
 (a) 41.60 (b) 40
 (c) 42.35 (d) 38.40
60. The vapour density of a sample of SO₃ gas is 28. Its degree of dissociation in to SO₂ and O₂ is
 (a) 1/7
 (b) 1/6
 (c) 6/7
 (d) 2/5

Percentage Composition

61. The commonly used pain reliever, aspirin, has the molecular formula C₉H₈O₄. If a sample of aspirin contains 0.968 g of carbon, what is the mass of hydrogen in the sample?
 (a) 0.717 g (b) 0.0717 g
 (c) 8.000 g (d) 0.645 g
62. For CuSO₄·5H₂O, which is the correct mole relationship?
 (a) 9 × mole of Cu = mole of O
 (b) 5 × mole of Cu = mole of O
 (c) 9 × mole of Cu = mole of O₂
 (d) mole of Cu = 5 × mole of O
63. The percentage of Fe(III) present in iron ore Fe_{0.93}O_{1.00} is (Fe = 56)
 (a) 94 (b) 6
 (c) 21.5 (d) 15
64. A quantity of 5 g of a crystalline salt when rendered anhydrous lost 1.8 g of water. The formula mass of the anhydrous salt is 160. The number of molecules of water of crystallization in the salt is
 (a) 3 (b) 5
 (c) 2 (d) 1
65. Cortisone is a molecular substance containing 21 atoms of carbon per molecule. The mass percentage of carbon in cortisone is 69.98%. What is the molecular mass of cortisone?
 (a) 180.05 (b) 360.1
 (c) 312.8 (d) 205.8
66. A polystyrene of formula Br₃C₆H₂(C₈H₈)_n was prepared by heating styrene with tribromobenzyl peroxide in the absence of air. It was found to contain 10.46% bromine, by mass. The value of *n* is (Br = 80)
 (a) 20 (b) 21
 (c) 19 (d) 22
67. A compound contains 36% carbon, by mass. If each molecule contains two carbon atoms, the number of moles of compound in its 10 g is
 (a) 66.67 (b) 0.15
 (c) 0.30 (d) 1.5
68. The percentage of oxygen in a compound is 4%. Its minimum molecular mass will be
 (a) 100 (b) 400
 (c) 200 (d) 32
69. In Dumas method, 0.2 g of an organic nitrogenous compound gave 28 ml of N₂ (volume reduced to 0°C and 1 atm). What is the percentage of nitrogen, by mass, in the compound?
 (a) 17.5 (b) 8.75
 (c) 35.0 (d) 14.0
70. A quantity of 0.2 g of an organic compound containing, C, H and O, on combustion yielded 0.147 g CO₂ and 0.12 g water. The percentage of oxygen in it is
 (a) 73.29% (b) 78.45%
 (c) 83.23% (d) 89.50%