Exercise Chapter 4
The Properties of Mixtures

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Self Test 9

- What partial pressure is needed to dissolve 21 g Of CO_2 in 100 g of water at 25^{o}C? (M_{CO2}=44.01 g/mol)

  Ans = 14 kPa

Self Test 10

Estimate the freezing point of 150 cm^3 of water sweetened with 7.5 g of sucrose.

($M_{sucrose}$:342.3 g mol^{-1}; cryoscopic constant: 1.86 K kg mol^{-1})

Self Test 11

- 5.00 g of a compound were added to 250 g of naphthalene and lowered the freezing point of the solvent by 0.780 K. Compute the molar mass of the compound.

  (K_f = 6.94 for naphthalene)

Ans: 273 g/mol

Self Test 12

- A gas at 250 K and 15 atm has a molar volume 12% smaller than that calculated from the perfect gas law. Calculate
- a) The compression factor under these condition (ans: 0.88)
- b)The molar volume of the gas (ans: 1.2 L/mol)

Self Test 13

- A vessel of volume 24.4 dm^3 contains 1.0 mol H_2 and 2.5 mol N_2 at 298.15 K. Compute the following process

  a) Each component with the following mole fraction

  (Ans: H_2=0.286, N_2=0.714)

  b) Their partial pressure

  (Ans: H_2: 101.6 kPa, N_2=254.5kPa)

  c) Their total pressure

  (Ans: 355.4 kPa)

Authors Information

Credit to the authors: Dr Suriati Ghazali, Dr Sunarti Abd Rahman, Dr Norhayati Abdullah, Dr Azizul Helmi