Question 1 – (10 Marks)

$$M_{CO_2} = \left(12.01\frac{g}{mol}\right) + \left(2 \times 16.00\frac{g}{mol}\right) = 44.01\frac{g}{mol}$$

$$M_{H_2O} = \left(2 \times 1.008\frac{g}{mol}\right) + \left(16.00\frac{g}{mol}\right) = 18.02\frac{g}{mol}$$

$$M_{NO_2} = \left(14.01\frac{g}{mol}\right) + \left(2 \times 16.00\frac{g}{mol}\right) = 46.01\frac{g}{mol}$$

$$m_C = \frac{0.6107\ g}{44.01\frac{g}{mol}} \times 12.01\frac{g}{mol} = 0.1667\ g$$

$$m_H = \frac{0.1458\ g}{18.02\frac{g}{mol}} \times (2 \times 1.008)\frac{g}{mol} = 0.01631\ g$$

$$m_N = \frac{0.1064\ g}{46.01\frac{g}{mol}} \times 14.01\frac{g}{mol} = 0.03240\ g$$

$$m_O = 0.2524 - 0.1667 - 0.01631 - 0.03240\ g = 0.03699\ g$$