

4(a.) Ave. Atomic Mass of Lithium = 6.94 u

(b.) % abundance Li-7 = $100 - 7.6 = 92.4\%$

(c.) Ave. Atomic Mass = (Li-6)(%) + (Li-7)(%)

$$6.94 = (6.015)(0.076) + (x)(0.924)$$

$$6.94 = 0.457 + 0.924x$$

$$6.94 - 0.457 = 0.924x$$

$$\frac{6.483}{0.924} = \frac{0.924x}{0.924}$$

$$\boxed{7.02 \text{ u}} = x$$

5. # of molecules = ? $n \times N_A$

$$m = 25.0 \text{ g}$$

$$M_{\text{CH}_4} = \frac{1 \times C = 1 \times 12.01}{4 \times H = 4 \times 1.01} \\ = 16.05 \text{ g/mol}$$

$$n = \frac{m}{M} = \frac{25.0 \text{ g}}{16.05 \text{ g/mol}} \\ = 1.55(7) \text{ mol}$$

$$\begin{aligned} \# \text{ of molecules} &= n \times N_A \\ &= 1.55(7) \text{ mol} \times 6.022 \times 10^{23} \text{ molecules/mol} \\ &= \boxed{9.38 \times 10^{23} \text{ molecules}} \end{aligned}$$