Bragg-Reflexion

$$\rho = 8.91 \text{ g/cm3}; \quad m = 63.5 \text{ u}$$

a) $\rho = \frac{m}{a^3}$

$$a = \sqrt[3]{\frac{m}{\rho}} = \underline{\underline{2.28 * 10^{-10} \text{ m}}}$$

b) $\theta_1 = 20°; \quad d_1 = a$

$$\Delta s = 2d \sin(\theta) = k\lambda = \lambda \hspace{4cm} (k = 1 \text{ for 1.Order})$$
$$\lambda = 2d \sin(\theta_1) = \underline{\underline{1.56 * 10^{-10} \text{ m}}}$$

c)

$$d_2 = \frac{a}{\sqrt{2^2+1^2+0^2}} = \frac{a}{\sqrt{5}} = \underline{\underline{1.02 * 10^{-10} \text{ m}}}$$
$$\theta_2 = \arcsin\left(\frac{\lambda}{2d_2}\right) = \underline{\underline{49.89°}}$$