43. (a) The cut-off wavelength $\lambda_{\min}$ is characteristic of the incident electrons, not of the target material. This wavelength is the wavelength of a photon with energy equal to the kinetic energy of an incident electron. According to the result of Exercise 3 of Chapter 39,

$$\lambda_{\min} = \frac{1240\,\text{eV}\cdot\text{nm}}{35 \times 10^3\,\text{eV}} = 3.54 \times 10^{-2}\,\text{nm} = 35.4\ \text{pm}\ .$$

(b) A K_α photon results when an electron in a target atom jumps from the L-shell to the K-shell. The energy of this photon is $25.51\,\text{keV} - 3.56\,\text{keV} = 21.95\,\text{keV}$ and its wavelength is $\lambda_{\text{K}\alpha} = (1240\,\text{eV}\cdot\text{nm})/(21.95 \times 10^3\,\text{eV}) = 5.65 \times 10^{-2}\,\text{nm} = 56.5\,\text{pm}$.

(c) A K_β photon results when an electron in a target atom jumps from the M-shell to the K-shell. The energy of this photon is $25.51\,\text{keV} - 0.53\,\text{keV} = 24.98\,\text{keV}$ and its wavelength is $\lambda_{\text{K}\beta} = (1240\,\text{eV}\cdot\text{nm})/(24.98 \times 10^3\,\text{eV}) = 4.96 \times 10^{-2}\,\text{nm} = 49.6\,\text{pm}$.