Result:

The photon is emitted.

The wavelengths are the same, 1005 nm.

Solution:

The energy change of the atom is negative. This means that the atom has less energy in its final state than it had in its initial state. Energy is conserved so the extra energy must be somewhere; it is the energy of an emitted photon. The total energy of photon plus atom after the change equals the energy of the atom before the change.

Using the Rydberg equation,

$$\frac{1}{\lambda} = 1.097 \times 10^7\ m^{-1}\left(\frac{1}{n_2^2} - \frac{1}{n_1^2}\right) = 1.097 \times 10^7\ \mathrm{m}^{-1}\left(\frac{1}{3^2} - \frac{1}{7^2}\right) = 9.950 \times 10^5\ \mathrm{m}^{-1}$$

$$\text{so } \lambda = 1.005 \times 10^{-6}\ \mathrm{m} = 1005\ \mathrm{nm} = 1.005\ \mu\mathrm{m}$$