

Exercises in preparation to the final test

date: , class: , student:

- **Exercise 1:** Write the equation for the α decay of ${}_{92}^{238}\text{U}$ (the atomic mass of ${}_{92}^{238}\text{U}$ is 238.050788u, the atomic mass of an α particle is 4.001506u). Calculate the energy released in the reaction (for the atomic mass of the result product ask your teacher).
- **Exercise 2:** Calculate the energy released in the β decay of ${}_{6}^{10}\text{C}$ (atomic mass 10.016853u) to ${}_{5}^{10}\text{B}$ (atomic mass 10.012937u). What type of β decay does this equation describe?
- **Exercise 3:** What are the force carriers of the four fundamental forces?
- **Exercise 4:** The number of atoms of a radioactive isotope reduces to 1/64 in 12 days. What is the half-life of the isotope?
- **Exercise 5:** Is the decay $e^{+} \longrightarrow \mu^{-} + \gamma$ possible? Motivate your answer.
- **Exercise 6:** “Build” a baryon that includes at least a Bottom quark, and a meson that includes a Strange quark.