

Name \_\_\_\_\_

## Nuclear Balancing

Balance the following nuclear decay equations:

- 1) Thorium-234 decays by beta emission.
- 2) Hydrogen-3 decays by beta emission.
- 3) Radon-222 decays by alpha emission.
- 4) Thorium-232 decays by alpha emission.
- 5) Potassium-40 decays by beta emission.
- 6) Carbon-14 decays by beta emission.
- 7) Barium-137 and a beta particle are formed from a decaying element.
- 8) Radon-222 and an alpha particle are formed from a decaying element.
- 9) Bismuth-210 and a beta particle are formed from a decaying element.
- 10) Protactinium-234 (Pa) undergoes both alpha and beta decay.

Balance the following nuclear transmutation equations:

- 11) Nitrogen-14 plus an alpha particle produces a proton and another atom.
- 12) Uranium-238 is bombarded with an alpha particle producing Plutonium-239 and some neutrons.
- 13) Carbon-12 is bombarded by an alpha particle creating another element and a neutron.
- 14) Hydrogen-3 is combined with Hydrogen-2 to produce Helium-4 and another particle.
- 15) Uranium-235 is bombarded by a neutron and splits into Barium-141, another element, and three neutrons.
- 16) Sodium-24 is bombarded by a proton creating another element and releasing a neutron.
- 17) Plutonium-241 and another particle creates plutonium-242 and the release of gamma rays.
- 18) Plutonium-244 was bombarded with Nitrogen-13 to produce a new element and releasing a neutron.
- 19) Lead-207 is bombarded with an alpha particle creating another element and releasing a proton.
- 20) Molybdenum-99 is bombarded with a proton and releases a neutron creating a new element.