

Name:

Date:

1. Write T (true) or F (false) for each of the following:
 - a) Natural radioactivity is emitted spontaneously.
 - b) The alpha decay Pu-239 occurs more quickly at higher temperatures.
 - c) Artificial radioactivity is not emitted spontaneously.
 - d) Beta particles are attracted to the negative pole of an electric field.
 - e) Gamma rays do not have mass.
 - f) X-rays are produced by radioactive elements.
 - g) Gamma rays can be stopped by a sheet of paper.
 - h) Alpha particles can be stopped by 2.5cm thickness of wood.
 - i) C-14 present in wood will decay more quickly if the wood is cut into kindling.
 - j) Beta particles have mass.
 - k) Gamma rays and x-rays are not deflected by a magnetic field.
 - l) X-rays have more energy than other forms of radiation.
 - m) Alpha and beta particles travel at the speed of light.
 - n) Transmutations occur more quickly at higher pressures.
 - o) After a radioactive isotope transmutes it is still the same element.
 - p) Nuclear radiation includes alpha and beta particles, gamma rays and x-rays.
 - q) Alpha particles are attracted to the negative pole of a magnetic or electric field.
 - r) In medicine, it is best to use radioisotopes (radioactive isotopes) which have a long half-life.
 - s) The half-life of Co-60 can be altered to meet the needs of different medical procedures.
 - t) All waves in the electromagnetic spectrum are radioactive.

2. If 800 kg of U-238 is stored away, how much of the U-238 will remain after 22.5×10^9 years?

The half-life of U-238 is 4.5×10^9 years.

3. A 5-kg bone contains 160 mg of Sr-90. How long will it be until only 5 mg of Sr-90 remains? The half-life of Sr-90 is 29 years.

Bonus: The mass of an electron is _____
compared to the mass of the atom.