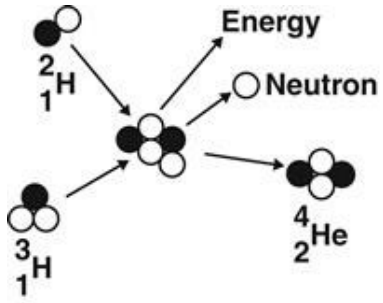
TEST NAME: **PSc 3.5 Nuclear Decay & Half Lives Spring 2018**
TEST ID: **2225456**
GRADE: **09 - Ninth Grade - 12 - Twelfth Grade**
SUBJECT: **Life and Physical Sciences**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

1. **Isotopes of hydrogen react, forming the element helium, as shown.**



This reaction is BEST classified as which?

A. nuclear decay
B. nuclear fission
C. nuclear fusion
D. nuclear half-life

2. **The equation shows the radioactive decay of iodine-131.**

$$^{131}_{53}\text{I} \rightarrow {}^{131}_{54}\text{Xe} + \text{particle}$$

What is the identity of the particle being emitted?

A. $^{0}_{-1}\beta$
B. $^{1}_{1}H$
C. $^{0}_{+1}e$
D. $^{4}_{2}He$

3. Why are beta particles able to penetrate objects better than alpha particles are?

A. because beta particles are larger than alpha particles
B. because beta particles are smaller than alpha particles
C. because beta particles are negatively charged, while alpha particles are neutral
D. because beta particles travel in a straight line, while alpha particles travel in waves

4. **An alpha particle that is emitted as nuclear radiation has the same structure as a**

   A. hydrogen nucleus.
   B. helium nucleus.
   C. neutron.
   D. electron.

5. **Carbon-14 has a radioactive half-life of 5700 years. If an organism has 10 g of carbon-14 in its body at the time of its death, how much carbon-14 will remain after 5700 years?**

   A. 10 g
   B. 7.5 g
   C. 5 g
   D. 2.5 g