*CLASS COPY! *
DO NOT TAKE!

Dougherty Valley HS
Chemistry – Nuclear Review

1. How many particles make up the nucleus of an atom and what are they?

2. Why do we say that the mass of an atom is in the nucleus?

3. Review the Five decay particles discussed in class. What are there names, symbols, charge, and Structure? Make sure you know this Chart!

Name	Alpha	Beta	Gamma	Neutron	Positron
Symbol	$^{4}_{2}He$	$^{0}_{-1}\beta$	$^{0}_{0}\gamma$	$^{1}_{0}n$	$^{0}_{+1}\beta$
Charge	+2	-1	0	0	+1
Structure	2 protons 2nuetrons	Fast moving negative particle	Photon	One Neutron	Fast moving positive particle

4. Complete the nuclear reactions below. Question marks are unknown elements.

a. $^{11}_{6}C \rightarrow {}^{0}_{+1}\beta + ?$

b. $^{238}_{92}U \rightarrow {}^{234}_{90}Th + ?$

c. $^{234}_{88}Ra \rightarrow {}^{0}_{0}\gamma + ?$

d. $^{24}_{11}Na \rightarrow {}^{24}_{12}Mg + ?$

e. $^{1}_{0}n + {}^{235}_{92}U \rightarrow 3\,{}^{1}_{0}n + {}^{92}_{36}Kr + ?$

f. $^{238}_{92}U \rightarrow {}^{234}_{90}Th + {}^{4}_{2}He \rightarrow {}^{0}_{0}\gamma + ?$

g. $^{1}_{0}n + {}^{235}_{92}U \rightarrow 4\,{}^{0}_{-1}\beta + {}^{90}_{38}Sr + ?$

h. $2\,{}^{3}_{1}H \rightarrow 2\,{}^{1}_{0}n + ?$

5. positron emission from sulfur-31. (emission means it releases that particle

6. Kypton-76 undergoes electron capture. (means it absorbs an $^{0}_{-1}e$)

7. Neutron initiated fission of U-235 results in the release of 2 neutrons, the formation of Cs-144 and another nucleus.

8. Bombardment of Cl-35 with a neutron produces a sulfur-34 nucleus and another particle. (means you make on a reactant)

9. Bismuth-214 can take two paths using Alpha and Beta decay to produce a new nucleus. Write out the equation for the two paths. What are the intermediate products and the final product? (this is a decay series – do α reaction first, then do a β reaction)