Name : _____ Date : _____

Nuclear Equations Worksheet

1. Complete the following nuclear reactions :

a) $^{35}_{17}\mathrm{Cl} + {}^{1}_{0}n \rightarrow {}^{35}_{16}\mathrm{S} +$ _____

b) $^{20}_{8}\mathrm{O} \rightarrow {}^{20}_{9}\mathrm{F} +$ _____

c) $^{104}_{47}\mathrm{Ag} \rightarrow {}^{0}_{1}e +$ _____

d) $^{238}_{92}\mathrm{U} + {}^{12}_{6}\mathrm{C} \rightarrow {}^{246}_{98}\mathrm{Cf} +$ _____

e) $^{229}_{90}\mathrm{Th} \rightarrow {}^{4}_{2}\mathrm{He} +$ _____

f) $^{54}_{26}\mathrm{Fe} + {}^{1}_{0}n \rightarrow {}^{1}_{1}\mathrm{H} +$ _____

g) _____ $\rightarrow {}^{0}_{-1}e + {}^{54}_{24}\mathrm{Cr}$

h) $^{207}_{87}\mathrm{Bi} + {}^{0}_{-1}e \rightarrow$ _____

2. Write the balanced equations for these nuclear reactions.

a) Neutron emission by $^{88}\mathrm{Br}$

b) Electron absorption by $^{116}\mathrm{Sb}$

c) Positron emission by $^{184}\mathrm{Hg}$

d) Alpha emission by $^{229}\mathrm{Th}$

e) Neutron capture by $^{200}\mathrm{Hg}$

3. Match these statements with a given choice (A, B, or C). They may be used more than once.

A – Fission B – Fusion C – Cold fusion

i. The type of reaction in the sun. _____

ii. The type of reaction in atomic bombs. _____

iii. An atomic nucleus is split into two roughly equal parts. _____

iv. Requires incredibly high temperatures. _____

v. Type of reaction in a nuclear power plant. _____

vi. Takes place at room temperature. _____

vii. 2 very light isotopes form a heavier one. _____

viii. Main type of reaction in a hydrogen bomb. _____

Name : _____ Date : _____

Nuclear Equations Worksheet

1. Complete the following nuclear reactions :

a) $^{35}_{17}Cl + {}^{1}_{0}n \rightarrow {}^{35}_{16}S + {}^{2}_{1}H$

b) $^{20}_{8}O \rightarrow {}^{20}_{9}F + {}^{0}_{-1}O$

c) $^{104}_{47}Ag \rightarrow {}^{0}_{1}e + {}^{104}_{46}Pd$

d) $^{238}_{92}U + {}^{12}_{6}C \rightarrow {}^{246}_{98}Cf + 4\,{}^{1}_{0}n$

e) $^{229}_{90}Th \rightarrow {}^{4}_{2}He + {}^{225}_{88}Ra$

f) $^{54}_{26}Fe + {}^{1}_{0}n \rightarrow {}^{1}_{1}H + {}^{54}_{25}Mn$

g) $^{54}_{25}Mn \rightarrow {}^{0}_{-1}e + {}^{54}_{24}Cr$

h) $^{207}_{87}Bi + {}^{0}_{-1}e \rightarrow {}^{207}_{82}Pb$

2. Write the balanced equations for these nuclear reactions.

a) Neutron emission by ^{88}Br

$^{88}_{35}Br \rightarrow {}^{87}_{35}Br + {}^{1}_{0}n$

b) Electron absorption by ^{116}Sb

$^{116}_{51}Sb \rightarrow {}^{0}_{-1}e + {}^{116}_{50}Sn$

c) Positron emission by ^{184}Hg

$^{184}_{80}Hg \rightarrow {}^{0}_{+1}e + {}^{184}_{79}Au$

d) Alpha emission by ^{229}Th

$^{229}_{90}Th \rightarrow {}^{225}_{88}Ra + {}^{4}_{2}He$

e) Neutron capture by ^{200}Hg

$^{200}_{80}Hg + {}^{1}_{0}n \rightarrow {}^{201}_{80}Hg$

3. Match these statements with a given choice (A, B, or C). They may be used more than once.

A – Fission B – Fusion C – Cold fusion

i. The type of reaction in the sun. B

ii. The type of reaction in atomic bombs. A

iii. An atomic nucleus is split into two roughly equal parts. A

iv. Requires incredibly high temperatures. B

v. Type of reaction in a nuclear power plant. A

vi. Takes place at room temperature. C

vii. 2 very light isotopes form a heavier one. B

viii. Main type of reaction in a hydrogen bomb. B