Name : _____ Date : _____

Nuclear Chemistry Worksheet

Part A. Identify the following as alpha, beta, gamma, or neutron.

1. ${}^{1}_{0}n$ _____ 2. ${}^{0}_{-1}e$ _____ 3. ${}^{4}_{2}\mathrm{He}$ _____ 4. ${}^{0}_{0}\gamma$ _____

5. Nuclear decay with no mass and no charge _____

6. An electron _____

7. Least penetrating nuclear decay _____

8. The most damaging nuclear decay to the human body _____

9. Nuclear decay that can be stopped by skin or paper _____

10. Nuclear decay that can be stopped by aluminum _____

Part B. Complete the following nuclear equations.

11. ${}^{42}_{19}\mathrm{K} \rightarrow {}^{0}_{-1}e +$ _____

12. ${}^{239}_{94}\mathrm{Pu} \rightarrow {}^{4}_{2}\mathrm{He} +$ _____

13. ${}^{42}_{19}\mathrm{K} \rightarrow {}^{0}_{-1}e +$ _____

14. ${}^{235}_{92}\mathrm{U} \rightarrow$ _____ $+ {}^{231}_{90}\mathrm{Th}$

15. ${}^{6}_{3}\mathrm{Li} \rightarrow {}^{4}_{2}\mathrm{He} +$ _____

16. _____ $\rightarrow {}^{142}_{56}\mathrm{Ba} + {}^{91}_{36}\mathrm{Kr} + 3\,{}^{1}_{0}n$

Part C. Write the equations for the following processes.

17. The alpha decay of radon – 198

18. The beta decay of uranium – 237

19. Positron emission from silicon – 26

20. Sodium – 22 undergoes electron capture

Name : _____ Date : _____

Nuclear Chemistry Worksheet

Part A. Identify the following as alpha, beta, gamma, or neutron.

1. $^{1}_{0}n$ neutron
2. $^{0}_{-1}e$ electron
3. $^{4}_{2}\mathrm{He}$ alpha
4. $^{0}_{0}\gamma$ gamma
5. Nuclear decay with no mass and no charge gamma
6. An electron beta
7. Least penetrating nuclear decay alpha
8. The most damaging nuclear decay to the human body gamma
9. Nuclear decay that can be stopped by skin or paper alpha
10. Nuclear decay that can be stopped by aluminum beta

Part B. Complete the following nuclear equations.

11. $^{42}_{19}\mathrm{K} \rightarrow {}^{0}_{-1}e + {}^{42}_{20}\mathrm{Ca}$
12. $^{239}_{94}\mathrm{Pu} \rightarrow {}^{4}_{2}\mathrm{He} + {}^{235}_{92}\mathrm{U}$
13. $^{42}_{19}\mathrm{K} \rightarrow {}^{0}_{-1}e + {}^{42}_{20}\mathrm{Ca}$
14. $^{235}_{92}\mathrm{U} \rightarrow {}^{4}_{2}\mathrm{He} + {}^{231}_{90}\mathrm{Th}$
15. $^{6}_{3}\mathrm{Li} \rightarrow {}^{4}_{2}\mathrm{He} + {}^{2}_{1}\mathrm{H}$
16. $^{236}_{92}\mathrm{U} \rightarrow {}^{142}_{56}\mathrm{Ba} + {}^{91}_{36}\mathrm{Kr} + 3\,{}^{1}_{0}n$

Part C. Write the equations for the following processes.

17. The alpha decay of radon – 198

$^{198}_{86}\mathrm{Rn} \rightarrow {}^{4}_{2}\mathrm{He} + {}^{194}_{84}\mathrm{Po}$

18. The beta decay of uranium – 237

$^{237}_{92}\mathrm{U} \rightarrow {}^{0}_{-1}e + {}^{237}_{93}\mathrm{Np}$

19. Positron emission from silicon – 26

$^{26}_{14}\mathrm{Si} \rightarrow {}^{0}_{+1}e + {}^{26}_{13}\mathrm{Al}$

20. Sodium – 22 undergoes electron capture

$^{22}_{11}\mathrm{Na} \rightarrow {}^{0}_{-1}e + {}^{22}_{10}\mathrm{Ne}$