Name: _____

Class: _____

Due Date: _____

Physics Topic 67 – Alpha, Beta, and Gamma Decay

Answer the following questions.

1. C: Define *random* and *spontaneous.*

2. C: *Radioactive decay* is both _____ and _____.

3. C: Define *alpha particle*. What is it made of? Charge?

4. C: What is the difference between an *alpha particle* and a *helium atom*?

5. E: Give two examples of *alpha decay*:

6. C: Define *neutrino*. What is it made of? Charge? Mass?

7. C: Define *anti-neutrino*. What is it made of? Charge? Mass?

8. C: Define *positron*. What is it made of? Charge? Mass?

9. C: Define *beta plus particle*. What is it made of? Charge? Mass?

10. C: What happens to a proton in a decaying nucleus during *beta plus decay*?

11. E: Give two examples of *beta plus decay*.

12.C: Define *beta minus particle*. What is it made of? Charge? Mass?

13.C: What is the difference between a *beta minus particle* and an *electron*?

14.C: What happens to a neutron in a decaying nucleus during *beta minus decay*?

15.E: Give two examples of *beta minus decay*:

16.C: Why was the neutrino postulated?

17.C: What is the charge and mass of an electron? What is the charge and mass of a neutrino ν?

18. C: Define *gamma ray*. What is it made of? Charge? Mass?

19. C: Why is it not correct to use the term *gamma particle*?

20. C: What is happening to an atom during *gamma decay*?

21. E: Give two examples of *gamma decay*: Gamma decay takes an excited and unstable atom and then makes it stable by releasing energy (as an electromagnetic wave) from the nucleus.

22. C: Define *ionization.*

23. C: Which particles have the most *ionizing ability* out of alpha particles, beta particles, and gamma rays?

24. C: Define *to penetrate.*

25. C: Define *penetrating power*. Which object can we use to stop an *alpha particle*? A *beta particle*? A *gamma ray*?