**Semester Exam Study Guide Part 1**

1. Give the appropriate metric units for the following quantities: temperature, mass, weight, distance, and time.

2. Convert 3.022m to mm

3. Convert 3.56g to kg

4. Convert 56µg to grams

5. If the density of oak wood is 0.710 g/cm3, how massive would 20m3 be? Also, would this wood float on water?

6. What do atoms make when they bond together? H2SO4 would be an example.

7. How many phases are in a bowl of cornflakes with milk?

8. Is fudge without nuts a homogeneous or heterogeneous mixture? What about with nuts?

9. What is the solute in a glass of salt water? What is the solute in a cup of Kool-Aid?

10. What is the difference between a compound and a mixture?

11. Is freezing point a chemical or physical property? What about conductivity? What about reactivity with acid?

12. Is mass an extensive or intensive property? What about luster?

13. What is heat? What unit is used to measure it?

14. In class, we observed sodium react violently with water. Is this an endothermic or exothermic reaction? Why?

15. Who stated that atoms were the smallest, unbreakable part of elements?

16. What model of the atom has electrons in fixed energy shells around the atom? Which one has them embedded in a positive chunk, like raisins in a cookie?

17. What is the difference between atomic number and atomic mass?

18. How do two isotopes of hydrogen differ from each other?

19. How many neutrons are in an atom of carbon with an atomic mass of 14?

20. What force acts to attract opposite charges and repel like charges? Which force counters this, holding the nucleus together, but only if it is small enough?

21. Describe alpha, beta, and gamma particles, including what they are made of and what is needed to stop them.

22. Name one positive and one negative effect or use of radioactivity.

23. In a common form of radioactive decay, uranium-238 decays to form thorium -234. What type of decay has occurred?

24. If the half-life of carbon-14 is 5730 years, approximately how old is a fossil specimen with 1/8 of its original carbon-14?

25. Name two differences between nuclear fission and fusion. Which is currently used for power generation? Why is the other not used?