Chemistry and Energy Test Review Honors

Name:_____

SPS2e. Apply the Law of Conservation of Matter by balancing the following types of chemical equation – synthesis, decomposition, single replacement, double replacement.

1. ___ C_2H_6 + ___ O_2 $\rightarrow$ ___ H_2O + ___ CO_2
2. ___ $(NH_4)_3PO_4$ + ___ $Pb(NO_3)_4$ $\rightarrow$ ___ $Pb_3(PO_4)_4$ + ___ NH_4NO_3
3. ___ $SeCl_6$ + ___ O_2 $\rightarrow$ ___ SeO_2 + ___ Cl_2
4. ___ H_2 + ___ O_2 $\rightarrow$ ____ H_2O
5. ___ NH_4NO_3 $\rightarrow$ ___ N_2 + ___ O_2 + ___ H_2O

SPS3. Students will characteristics and components of radioactivity.

6. If the half-life of iodine-131 is 8.10 days, how long will it take a 50.00 g sample to decay to 6.25 g?

7. If 100.0 g of carbon-14 decays until only 25.0 g of carbon is left after 11,460 years, what is the half-life of carbon-14?

8. If you have 200g of radioactive Polonium with a half-life of 50 years, how much Polonium will be left after 150 years?

9. Explain the difference between *Fusion* and *Fission.*

10. Differentiate between alpha and beta particles and gamma radiation.

SPS7. Students will relate transformations and flow of energy within a system.

S8P2a. Explain energy transformation in terms of the Law of Conservation of Energy.

11. A rolling ball eventually comes to a stop. Where did the energy in the ball go?
    a. It was destroyed.
    b. It was transformed into thermal energy through friction.
    c. It was transferred to the grass.
    d. It disappeared like magic.

12. What energy transformation occurs in a burning match?
    a. Chemical to thermal to electromagnetic
    b. Thermal to chemical and smell
    c. Electromagnetic to thermal and magnetic
    d. Chemical to electrical and nuclear

13. What type of energy conversion happens when you draw a picture on the floor?
    a. Chemical to thermal to electrical
    b. Thermal to mechanical to chemical
    c. Mechanical to chemical to thermal
    d. Chemical to mechanical to thermal

14. Which of the following would be the BEST example for an energy transformation from chemical energy to thermal energy?
    a. A pot of boiling water.
    b. A campfire.
    c. A Flashlight.
    d. A nuclear bomb.

S8P2b. Explain the relationship between potential and kinetic energy.

15. Wiley Coyote was chasing the Roadrunner and ran off a cliff. Where does he have the most potential energy?
    a. When he holds up the sign saying “Yikes!” before he falls.
    b. Right after he starts to fall.
    c. Halfway to the ground as he falls.
    d. Just before he hits the ground at the bottom.

16. Which has the most kinetic energy?
    a. Ice cream
    b. Sweet tea
    c. Helium in a balloon
    d. Raindrops falling on my head

17. Where does a rollercoaster have the most potential energy?
    a. At the top of the highest hill.
    b. At the bottom of the highest hill.
    c. At the entrance to a loop.
    d. At the location of the nearest exit.

18. Which has the least potential energy?
    a. A 150 pound man standing still.
    b. A 150 pound man walking at 2 miles per hour.
    c. A 150 pound man jogging at 10 miles per hour.
    d. A 150 pound man running at 18 miles per hour.

19. Which of the following has the most potential energy?
    a. A car driving on the highway.
    b. A man on the top of a ladder.
    c. An orange sitting on top of a table.
    d. A ball in the air as it sails over the back fence.

S8P2c. Compare and contrast the different forms of energy and their characteristics.

20. Which of the following describes the energy of moving parts?
    a. Chemical energy.
    b. Mechanical energy.
    c. Nuclear energy.
    d. Electromagnetic Energy.

21. Which of the following best represents chemical energy?
    a. Fireworks!
    b. The nuclear power plant where Homer Simpson works.
    c. A compact fluorescent light bulb.
    d. Asimo, the Honda Robot.

22. A source of electromagnetic energy is
    a. A pound of prime Wisconsin Cheddar cheese.
    b. A light emitting diode otherwise called an LED light.
    c. A refrigerator magnet advertising dog grooming services.
    d. A group of 200 guys slamming into one another in a mosh pit.

23. Thermal energy is best represented by
    a. A flannel shirt because flannel is awesome.
    b. Two atoms being smashed together to make one bigger atom.
    c. The energy stored in the bonds between two atoms.
    d. The energy of particles in the different states of matter.

24. The energy you get due to an object's attraction to another object is called
    a. Electrical energy
    b. Magnetic energy
    c. Thermal energy
    d. Gravitational energy

25. The energy stored in the bonds between two atoms is
    a. Nuclear energy
    b. Chemical energy
    c. Thermal energy
    d. Electromagnetic energy

26. Light waves are representative of this form of energy:
    a. Sound energy
    b. Electromagnetic energy
    c. Mechanical energy
    d. Thermal energy

27. This kind of nuclear energy is obtained by combining 2 smaller atoms into one large atom.
    a. Fusion
    b. Fission
    c. Fructis
    d. Fussy Onion

28. All stars, including The Sun, use this kind of nuclear energy:
    a. Fusion
    b. Fission
    c. Factual
    d. Fraggle

29. The energy generated when a speaker vibrates the air is this type of energy:
    a. Electromagnetic
    b. Electrical
    c. Thermal
    d. Sound

30. Explain how coal is transformed into electricity.