

Vasquez High School -- Chemistry B -- Test #1 -- Chapter 10 -- 80 points

Write TRUE if the statement is true OR write the word(s) that substitutes for the underlined word(s) that would make it true. Writing false earns partial credit. Three points each.

- _____ 1) The potential energy of the products is lower than the potential energy of the reactants in an exothermic reaction.
- _____ 2) The magnitude of ΔH is directly proportional to the quantities of reactants and products in a reaction.
- _____ 3) The lightest component of crude oil is methane.
- _____ 4) Ozone is mainly responsible for the greenhouse effect.
- _____ 5) The first law of thermodynamics enables the calculation of the heat for a given reaction from known heats of related reactions.

Short Answer/Fill-in. Be clear, neat and complete. Three points apiece.

- 6) What is the difference between heat and temperature? _____
_____.
- 7) The word thermodynamics literally means _____.
- 8) The three types of coal are _____, _____ and _____.
_____. (Do your best in spelling them.)
- 9) One food calorie is how many joules? _____
- 10) Give an example of the second law of thermodynamics: _____
_____.
- 11) Given three examples of products obtained from crude oil not already mentioned somewhere on this test:

- 12) Aside from petroleum, the other two main families of fossil fuels are what? Burning them produces excess what into the atmosphere? _____
_____.
- 13) Define specific heat capacity (precisely): _____
_____.
- 14) What was added to the potassium permanganate for the final demonstration? _____

15) For one point each, write 1 if exothermic and 2 if endothermic:

_____ a) When concentrated nitric acid is added to water, the solution gets very hot.

_____ b) Rolling a large stone ball up a hill.

_____ c) An ice cube left on the table melts.

16) At the right, draw a labelled diagram of a calorimeter. Five points.

Calculation Section. Five points each. Write the appropriate equation.

17) How much heat is needed to raise 6.4 kg of water from 18 °C to 73 °C?



18) Given the equation: $2\text{B} + \frac{3}{2}\text{O}_2 \Rightarrow \text{B}_2\text{O}_3$ $\Delta\text{H} = -1273 \text{ kJ}$ How much heat is given off when 75 grams of oxygen is used?

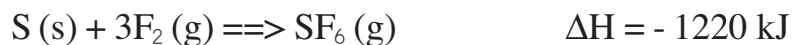
19) An unknown metal of mass 209.4 g requires 7785 J to heat it from 245 K to 384 K. What is the specific heat of the metal?

20) If it takes 2780 J of energy to warm 55 g of butanol by 19 °C, how much energy would be needed to warm 86 g of butanol by 28 °C?

- 21) Sulfur hexafluoride, one of the heaviest known gases, is used to insulate circuit breakers, transformers, and other electrical equipment including high voltage power lines.



Using the equations shown, determine the heat of reaction for the formation of sulfur hexafluoride. Ten points on this one.



- 22) EXTRA CREDIT -- Three points -- Guessing is okay. If you were told that today's temperature was 25 °C and tomorrow would be twice as hot, what would tomorrow's temperature be?