NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ CHEMICAL REACTIONS VS. PHYSICAL CHANGES

DIRECTIONS: Answer each of the following questions **by selecting or by providing the most correct answer**. Remember to be critical readers and thinkers, remember to analyze, circle important terms, and redefine terms. **In order to receive full credit you must be very specific in your reasoning, for those questions asking you to defend your reasoning.** Place EVERY ANSWER on this sheet. All multiple-choice responses are to be placed next to the number of the question.

**Just as a house is made of stones, so too is science made of facts, but a pile of stones is not a house, and a pile of facts is not a science. (**Henri Poincare)

1) Given: 2 N2(g) + 3 O2(g)  2 N2O3(g) + 200 kJ

A student claimed that the above represents a chemical reaction, primarily.

Is the student correct? Defend your answer:

2) Given: N2H4(ℓ)  + O2(g) 🡪 N2(g) + 2 H2O(g) + 300 kJ

A student claimed that the above represents a chemical reaction, primarily.

Is the student correct? Defend your answer:

3) Given: C6H4Cl2(ℓ) C6H4Cl2(s) + 100 kJ

A student claimed that the above represents a chemical reaction, primarily.

Is the student correct? Defend your answer:

Put your answer next to the question number

4) Which of the following terms deals, most closely, with a **chemical reaction**?

1) dissolving 3) combusting

2) melting 4) filtering

Put your answer next to the question number

5) Which statement describes a **chemical property** of the element tungsten?

1) Tungsten is malleable, so that it forms a thin sheet.

2) Tungsten conducts an electrical current in a light bulb

3) Tungsten has a melting point of 3,422°C

4) Tungsten bonds with oxygen.

6) Which of the following terms deals, most closely, with a **physical change?**

1) Both 3 and 4 3) dissolving

2) combustion 4) amalgamation

7) Which is a **physical property** which could be used to differentiate between and help to identify a sample

of silver metal and a sample of titanium metal in the laboratory?

1) ability to be oxidized 3) density

2) mass 4) volume

8) A student took the temperature of 150.0 mL of water. She then dissolved 30.00 grams of NaOH(s) into

the water according to the equation:

H2O (𝓁)

NaOH (s) 🡪 Na+1(aq) + (OH)-1(aq) + 44.5 kJ

She took the temperature of the resulting aqueous solution. Using the above information and her

knowledge of chemistry she could infer that the reaction was :

1) endothermic & the temperature of the surrounding water increased

2) exothermic & the temperature of the surround water increased

3) exothermic & the temperature of the surrounding water decreased

4) endothermic & the temperature of the surrounding water decreased

9) ***Carbon forms molecular compounds with some elements from Group 16. Two of these compounds are carbon***

***dioxide, CO2 and carbon disulfide CS2.***

***Carbon dioxide is a colorless, odorless gas at room temperature. At temperatures above standard temperature,***

***CO2(s) changes directly to CO2(g), with a phase change process, called sublimation.***

***Carbon disulfide is formed by a direct reaction of carbon and sulfur. At room temperature, CS2(s) is a colorless***

***liquid with an offensive odor. The vapors of carbon disulfide are flammable.***

Identify *one physical* property and *one chemical* property of CS2 at room temperature.

physical property: chemical property

10) Explain how freezing can be considered to bean *exothermic physical* change. Be sure to address both

terms italicized terms in your response.