**Mr. Guch’s Final Exam – Honors, 2021-22 School Year**

1. Write the complete equation for the following reaction: When powdered iron is heated to a temperature of 850o C, it will readily act with oxygen to form iron (III) oxide powder. This reaction gives off a great deal of energy. (5 pt)
2. For the reaction in problem 1, how many grams of iron powder will be needed to form 450 grams of iron (III) oxide? (5 pt)
3. A man at the doctor’s office was found to have 2.5 moles of air in his lungs. If his body temperature is 250 K and the pressure in the room is 1.00 atm, what is the volume of his lungs? R = 0.08206 L atm/mol K. (3 pt)
4. Is the man in problem 3 likely alive? Explain. (2 pt)
5. If the man in problem 3 dies from the Andromeda strain and his body temperature reaches 290 K, what will the new volume of his lungs be? (3 pt)
6. If I wanted to do a double displacement reaction that would form silver chloride, devise a reaction that would allow me to do this. (3 pt)
7. What is the difference between diffusion and effusion? (4 pt)
8. How can I tell a solution apart from a colloid? (2 pt)
9. What is the molality of a solution formed by adding 8.5 grams of C6H12O6 to 1.85 L of water? (3 pt)
10. What would the melting point of the solution in problem 10 be. (Kf for water is 1.86 oC/m)? (3 pt)
11. Define the following terms (3 pt each)

* colloid
* ideal gas
* limiting reagent