

Name: \_\_\_\_\_

Date: \_\_\_\_\_

[4 pt] 1. In an endothermic reaction, do the products have less mass, more mass, or the same mass as the reactants? Explain. 1. \_\_\_\_\_

[4 pt] 2. What is the mass defect in g/mol for  $^{32}\text{S}$  with atomic mass = 31.9721 amu? (Remember to subtract the mass of the electrons.) 2. \_\_\_\_\_

[6 pt] 3. What is the binding energy in (a) J/mol and (b) MeV/nucleon for the atom in the previous question? (a) 3(a) \_\_\_\_\_

(b) 3(b) \_\_\_\_\_

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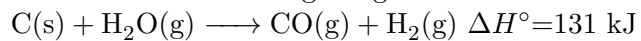
[6 pt] 4. Answer the following questions given that  $^{28}\text{Mg}$  decays by  $\beta$ -emission to  $^{28}\text{Al}$ . The atomic masses are 27.9839 amu and 27.9819 amu respectively.

(a) Write the reaction that occurs:

(b) What is the change in energy (in J/mol) for the reaction 4(b) \_\_\_\_\_

(c) Why can you ignore the mass of the electrons in the problem?

[5 pt] 5. What is the mass change in grams for the following reaction:



5. \_\_\_\_\_

[5 pt] 6. How much energy (kJ/mol) is released in the fusion reaction of  $^2\text{H}$  to yield 1 mole of  $^3\text{He}$ ? The atomic masses are 2.0141 amu and 3.0160 amu respectively. (Hint: you might want to write a reaction to help solve this problem)

6. \_\_\_\_\_