

Name:

Honors Chemistry

Section:

Thermodynamics Alternative Assessment

In lieu of a written in-class exam, you will demonstrate your knowledge of thermodynamics by developing either a review sheet or a practice test for this unit. You will submit two copies of your review sheet/practice test: one student-ready copy, and one with a complete answer sheet. This will be recorded as a test grade. All questions must be written by you, but you may use outside sources for examples/problem types (be sure to cite your sources!).

Listed below are the learning objectives for this unit:

- State the general properties of energy.
- Define and give examples of state functions.
- Compare and contrast temperature and heat.
- Compare and contrast endothermic and exothermic processes.
- Describe in words and diagrams the heat changes that occur in melting, freezing, boiling, and condensing, and calculate the heat changes involved.
- Calculate the heat changes that occur in chemical and physical processes involving temperature changes (calorimetry problems).
- Describe in words and diagrams the heat changes involving multiple steps, and calculate the heat changes involved.
- Apply Hess' Law of heat summation to find heat changes for chemical and physical properties.
- State two reasons why reactions occur.
- State the reasons that energy changes occur in chemical reactions.
- Define enthalpies of formation and use them to calculate enthalpies of reaction.
- Explain how the quality of energy changes as it is used.
- Describe and give examples of changes in entropy.
- Calculate Gibb's free energies, and relate Gibb's free energy to the spontaneity of reactions.

Your work will be evaluated using the following rubric:

Range of assigned problems *minimum of one original problem for each objective, with "core level" problems and "challenge level" problems included *includes one question based on a lab/analyzing data See the "Effective" rubric	25 pts
Variety of problem types for example: matching, open response, stating definitions, problems, picture models, interpreting diagrams, etc. See the "Organized" rubric	15 pts
Answer Key Complete, correct solutions for each problem See the "Accuracy of written work" rubric	45 pts
References Minimum of two references, including at least one text besides Introductory Chemistry (Zumdahl et al)	5 pts
On time	5%/day late penalty
Neatness Ready to photocopy, easy to read, no major errors	5 pts
Statement of Independent Work Attached to completed assignment.	5 pts

Absence is not an excuse for missing a deadline.

TOTAL: 100 pts

Statement of Independent Work

<p>I, _____, state that this review sheet/practice test is my own (name in full) work. I completed the assignment independently and did not receive help from any living person (including but not limited to classmates, friends, teachers, or parents). Signed _____ Date _____</p>

Effective

6: Student work is unusually effective. All objectives are accomplished with flair, all aspects of the problem are completely solved, and/or the intended audience is fully satisfied.

5: Student work is highly effective. The objectives are accomplished, the problems are solved, and/or the intended audience is satisfied.

4: Student work is effective. The objectives are accomplished, problems are solved and/or the intended audience is satisfied, though there may be some minor weaknesses of presentation or content.

3: Student work is somewhat effective. The result is of uneven quality: either there are some noticeable weaknesses of presentation or content though overall objectives are accomplished, OR not all objectives/requirements are met.

2: Student work is not very effective. Key objectives/goals/expectations are not accomplished and/or the intended audience is somewhat dissatisfied. Errors or gaps in presentation and/or content are significant and distracting.

1: Student work is not effective. The objectives/goals/expectations are not accomplished and/or the intended audience is dissatisfied. There are significant errors or gaps in presentation as well as content.

Math/Science: Accuracy of Written Work

5: Student work is accurate throughout. All calculations are correct, provided to the proper degree of precision/measurement error, and properly labeled.

4: Student work is accurate and complete. All important calculations are correct and provided to the proper degree of precision; what mistakes are made are few and related to minor calculations. The student's work is clearly shown and able to be understood.

3: Student work is mostly accurate. Most important calculations are correct, but some are incorrect/imprecise. The work may be somewhat difficult to follow, as presented, or the work is very messy even if it can be followed.

2: Student work has inaccuracies throughout.

1: Student work is marred by repeated inaccuracies.

Organized

6: Student work is unusually well-organized. Everything comes together. The performance is coherent and fluid: there is a logical and seamless flow, a consistent approach/theme/style, nothing is out of place, and the priorities are clear.

5: Student work is highly organized. The performance is coherent: there is a logical flow, a consistent approach/theme/style, little is out of place, and the priorities are clear.

4: Student work is organized. The performance is mostly coherent: there is an apparent logic, a mostly consistent approach/theme/style, few elements are out of place, and priorities are mostly clear.

3: Student work is somewhat organized. The performance does not quite come together: there are ideas/details/facts/elements of performance that are not pursued or brought together.

2: Student work is not very well organized. The performance does not come together: there are numerous ideas/details/facts/elements of performance that are not pursued or brought together.

1: Student work is disorganized. There is no apparent unity, focus, style, theme, or logic to the performance. Ideas/elements/facts occur at random.