

## General Chemistry I (Chem 50) – Entrance Exam Study Guide

The entrance exam contains 50 questions. A periodic table will be provided. Use pencil to bubble answers on the provided bubble sheet.

**Students who perform at an acceptable level (C+ or higher will earn some extra credit points toward their exams in this course). Students who perform at a failing level (65% or less) are discouraged from taking this course and encouraged to enroll in an introductory chemistry course asap!**

**Review the following topics at the Introductory Chemistry level (course prerequisite).**

Note: There may be more than 1 question covering each topic.

1. Calculator operation (Calculation involving  $\times$ ,  $\div$ ,  $+$ ,  $-$  and numbers including scientific notation)
2. Significant figures (Identify count, Round to proper count)
3. Scientific notation (Convert any number to its scientific notation equivalent)
4. Density calculation (solve for an unknown variable using density equation or dimensional analysis)
5. Periodic table structure (Identify element that have similar properties and major group names)
6. Isotopes (Define & determine atomic particle count and type given an atomic nuclear symbol)
7. Atomic structure (Identify parts and types of particles, their location and their charges)
8. Atomic structure (Identify valence and core electrons from atomic symbol)
9. Elements (Identify names/symbol)
10. Formulas (Predict formulas between 2 elements that can form an ionic compound)
11. Formulas (Identify compound as covalent or ionic given its formula)
12. Ions (Define and classify as cation or anion)
13. Nomenclature (Name simple ionic or covalent compounds given their formulas)
14. Nomenclature (Provide formula given compound name based on ion charges)
15. Nomenclature (Name polyatomic ionic compounds given their formulas)
16. Formula calculations (mole/mass conversions)
17. Formula calculations (count/mass conversions)
18. Stoichiometry (mass/mass conversion given a balanced chemical equation)
19. Formula calculations (Determine molar mass given formula)
20. Chemical reactions (Write the chemical balanced equation for a chemical reaction described in words)
21. Formula calculations (Determine mass % of each element, given formula)
22. Mixtures (Distinguish between, solution, compound, elements, homogeneous & heterogeneous mixture)

23. Solution concentration (Define molarity)
24. Solution dilution (Define the process)
25. Solution (Identify diagram for a soluble ionic compound)
26. Energy (Define and identify exothermic vs. endothermic processes)
27. Gases (Identify pressure-volume relationship given a diagram and graph)
28. Gases (Identify the correct graph for pressure-temperature relationship)
29. Bonding (Define a covalent bond and identify a polar bond)
30. Bonding (Write Lewis structure for a compound)
31. Formulas (Count atoms given a formula representation)
32. Stoichiometry (mol/mol conversion given a balanced chemical equation)
33. Stoichiometry (mol/mass conversion given a balanced chemical equation)