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Chemistry (Quick Study Academic)

Quick Study Academic

CHEMISTRY

Periodic Table of Elements

Atomic Structure

- Atomic number (Z): The number of protons in the nucleus. For a neutral atom, $Z =$ number of electrons. For an anion of charge $-q$, $Z =$ number of electrons for a cation of charge $+q$, $Z =$ number of electrons.
- Mass number (A): $Z + N$, where $N =$ the number of neutrons in the nucleus.
- Isotopes: Atoms with the same Z , different A , are isotopes of an element. In practice, they usually contain a number of neutrons in addition to the average mass number on atomic weight (weighted average of masses of isotopes for a given element).

Atomic Quantum Numbers & Orbitals

- n : principal quantum number
- l : azimuthal quantum number (orbital shape)
- m_l : magnetic quantum number (orbital orientation)
- For each l , the possible values are $0, 1, \dots, l$
- For each l , the possible values are $-l, \dots, 0, \dots, +l$
- For two degenerate orbitals (l and $-l$) together, they form a pair.
- Each value of n has a "shell" in the earlier chapters, each l has a "subshell".
- Orbitals $l = 0, 1, 2$ are s, p, d orbitals.
- Orbitals $l = 3, 4$ are f, g orbitals.

Many-Electron Atoms

Orbitals and quantum numbers derived for the hydrogen atom are used to describe all many-electron atoms and ions, a more rigorous treatment determines exact energy levels and orbital probabilities. The order of levels is given in the Aufbau diagram; the filling of levels is guided by the Aufbau principle.

n	l	m_l	element
1	0	0	1s-orbital
2	0	0	2s-orbital
2	1	0	2p-orbital
2	1	1	2p-orbital
2	1	-1	2p-orbital
3	0	0	3s-orbital
3	1	0	3p-orbital
3	1	1	3p-orbital
3	1	-1	3p-orbital
3	2	0	3d-orbital
3	2	1	3d-orbital
3	2	2	3d-orbital
3	2	-1	3d-orbital
3	2	-2	3d-orbital

Periodic Trends

- Chemistry determined by the behavior of valence electrons.
- Atoms on same side (left or right) show the same electronic structure.
- Carbon and silicon (same group) show the same electronic structure.

Reaction Application

The reaction of hydrogen gas with oxygen gas is the principle of the hydrogen bomb.



Synopsis

BarCharts™ best-selling quick reference to chemistry has been updated and expanded in this new edition. With updated content and an additional panel of information, this popular guide is not only an essential companion for students in introductory chemistry courses but also a must-have refresher for students in higher-level courses. Author Mark D. Jackson, PhD, a scientist and university chemistry professor, has a gift for making the complicated subject of chemistry interesting and easy to understand—without the fluff. In this new edition, you will find more coverage of the subject, helpful illustrations, chemical problems, and practical applications, making this a study tool you won't want to be without.

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Customer Reviews

I am taking College Chemistry levels I & II. I have used this reference multiple times. It has a 2012 copyright, compared to the Chemistry Equations & Answers (2006), both by BarCharts, Inc. This one is by far the more user-friendly. I have tried to use the Equations & Answers, but always fall back to this one. The other one doesn't even have a periodic table, which you are always looking for when studying. This is very helpful to anyone taking an intro HS or college chemistry class. Buy it, you will be thankful later.

Great little resource for intro Chemistry courses. Pros: Cheap! This thing costs less than most specialty coffee drinks. It condenses complex topics into manageable words for students to better

understand. Cons: It is often not required for courses so it will be an additional expense. Overall: If you are new to chemistry this is a must. It will make homework much easier as you do not have to shuffle through books with 500+ pages to find definitions or even some equations. It will likely be more useful than full texts if you have a good professor to first explain concepts to you.

This item is 6 pages long, 3 double-sided laminated pages, not just a single 2 sided laminated page like many of the other study guides. It is very comprehensive and while it may contain too much information for very basic chem classes, it has ALL the information you would need for a quick reference. It is mainly a study aid, it won't give you all the answers - you need to be at the least slightly familiar with the subject for this to help. I am buying a separate periodic table even though this contains a basic one, but it is good enough for basic problem solving!

This is a great reference tool for my Chemistry class. Having the necessary formulas and notes in one place is very helpful. I will have a good 2 years of Chemistry and Organic Chemistry to get through to complete my degree. Tools like these are a Godsend.

Very good resource. I have been working with high-school students in tutoring Chemistry. This is a good resource to see what is needed to answer questions in a concise way that may not be answered simply with their text book. Also good resource for formulas and basic definitions as a reference for studying for tests and review through the semester.

I have taken chemistry three years in a row and every once in a while I forgot about certain things but with this study guide I am able to go back and review the subject without opening my textbook. This product does not take up much space, it fits in a folder and can be taken out easily.

I like the BarCharts. They are very helpful for stuffing a ton of information in a small study sheet. As a quick reference, they are handy. I've used them for Chem, Electronics, Physics and Math. All pretty good for what they are!

All the important chemistry info at your finger tips! A great resource if you are starting out or need a refresher for a more advanced chemistry class. Love the fact that it easily fits into a 3 ring binder for easy access. Not for the lame-brain!

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