

A&P 02 Chemical Level of Organization Essay

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Published 2014

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4. Chapter: A&P 02 Chemical Level of Organization Essay

1. A&P 02 Chemical Level of Organization Essay Questions

4.1.1. Visit this website (<http://openstaxcollege.org/l/ptable>) to view th...

Author: OpenStax College

Visit this website (<http://openstaxcollege.org/l/ptable>) to view the periodic table.

In the periodic table of the elements, elements in a single column have the same number of electrons that can participate in a chemical reaction.

These electrons are known as "valence electrons." For example, the elements in the first column all have a single valence electron-an electron that can be "donated" in a chemical reaction with another atom.

What is the meaning of a mass number shown in parentheses?

- The mass number is the total number of protons and neutrons in the nucleus of an atom.

Check the answer of this question online at QuizOver.com:

Question: [Visit this website http://openstaxcollege](http://openstaxcollege.org/l/ptable) OpenStax College Anatomy

4.1.2. Visit this website (<http://openstaxcollege.org/l/electenergy>) to le...

Author: OpenStax College

Visit this website (<http://openstaxcollege.org/l/electenergy>) to learn about electrical energy and the attraction/repulsion of charges.

What happens to the charged electroscope when a conductor is moved between its plastic sheets, and why?

- The plastic sheets jump to the nail (the conductor), because the conductor takes on electrons from the electroscope, reducing the repellant force of the two sheets.

Check the answer of this question online at QuizOver.com:

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4.1.3. Watch this video (<http://openstaxcollege.org/l/disaccharide>) to obs...

Author: OpenStax College

Watch this video (<http://openstaxcollege.org/l/disaccharide>) to observe the formation of a disaccharide.

What happens when water encounters a glycosidic bond?

- The water hydrolyses, or breaks, the glycosidic bond, forming two monosaccharides.

Check the answer of this question online at QuizOver.com:

Question: [Watch this video http://openstaxcollege.org/l/disaccharide](http://openstaxcollege.org/l/disaccharide) OpenStax College Anatomy

4.1.4. The most abundant elements in the foods and beverages you consume a...

Author: OpenStax College

The most abundant elements in the foods and beverages you consume are oxygen, carbon, hydrogen, and nitrogen.

Why might having these elements in consumables be useful?

- These four elements-oxygen, carbon, hydrogen, and nitrogen-together make up more than 95 percent of the mass of the human body, and the body cannot make elements, so it is helpful to have them in consumables.

Check the answer of this question online at QuizOver.com:

Question: [The most abundant elements in the foods OpenStax College Anatomy](#)

4.1.5. Oxygen, whose atomic number is eight, has three stable isotopes: 16...

Author: OpenStax College

Oxygen, whose atomic number is eight, has three stable isotopes: ^{16}O , ^{17}O , and ^{18}O .

Explain what this means in terms of the number of protons and neutrons.

- Oxygen has eight protons. In its most abundant stable form, it has eight neutrons, too, for a mass number of 16. In contrast, ^{17}O has nine neutrons, and ^{18}O has 10 neutrons.

Check the answer of this question online at QuizOver.com:

Question: [Oxygen whose atomic number is eight has OpenStax College Anatomy](#)

4.1.6. Magnesium is an important element in the human body, especially in ...

Author: OpenStax College

Magnesium is an important element in the human body, especially in bones. Magnesium's atomic number is 12.

Is it stable or reactive? Why? If it were to react with another atom, would it be more likely to accept or to donate one or more electrons?

- Magnesium's 12 electrons are distributed as follows: two in the first shell, eight in the second shell, and two in its valence shell.

According to the octet rule, magnesium is unstable (reactive) because its valence shell has just two electrons.

It is therefore likely to participate in chemical reactions in which it donates two electrons.

Check the answer of this question online at QuizOver.com:

Question: [Magnesium is an important element in the OpenStax College Anatomy](#)

4.1.7. Explain why CH₄ is one of the most common molecules found in nature...

Author: OpenStax College

Explain why CH₄ is one of the most common molecules found in nature. Are the bonds between the atoms ionic or covalent?

- A carbon atom has four electrons in its valence shell. According to the octet rule, it will readily participate in chemical reactions that result in its valence shell having eight electrons. Hydrogen, with one electron, will complete its valence shell with two. Electron sharing between an atom of carbon and four atoms of hydrogen meets the requirements of all atoms. The bonds are covalent because the electrons are shared: although hydrogen often participates in ionic bonds, carbon does not because it is highly unlikely to donate or accept four electrons.

Check the answer of this question online at QuizOver.com:

Question: [Explain why CH₄ is one of the most common OpenStax College Anatomy](#)

4.1.8. In a hurry one day, you merely rinse your lunch dishes with water.

...

Author: OpenStax College

In a hurry one day, you merely rinse your lunch dishes with water.

As you are drying your salad bowl, you notice that it still has an oily film. Why was the water alone not effective in cleaning the bowl?

- Water is a polar molecule. It has a region of weakly positive charge and a region of weakly negative charge. These regions are attracted to ions as well as to other polar molecules. Oils are nonpolar, and are repelled by water.

Check the answer of this question online at QuizOver.com:

Question: [In a hurry one day you merely rinse your OpenStax College Anatomy](#)

4.1.9. Could two atoms of oxygen engage in ionic bonding? Why or why not?

Author: OpenStax College

Could two atoms of oxygen engage in ionic bonding? Why or why not?

- Identical atoms have identical electronegativity and cannot form ionic bonds. Oxygen, for example, has six electrons in its valence shell.
Neither donating nor accepting the valence shell electrons of the other will result in the oxygen atoms completing their valence shells.
Two atoms of the same element always form covalent bonds.

Check the answer of this question online at QuizOver.com:

Question: [Could two atoms of oxygen engage in ionic OpenStax College Anatomy](#)

4.1.10. $AB + CD \rightarrow AD + BE$ Is this a legitimate example of an exchange reac...

Author: OpenStax College

$AB + CD \rightarrow AD + BE$ Is this a legitimate example of an exchange reaction? Why or why not?

- It is not. An exchange reaction might be $AB + CD \rightarrow AC + BD$ or $AB + CD \rightarrow AD + BC$.
In all chemical reactions, including exchange reactions, the components of the reactants are identical to the components of the products.
A component present among the reactants cannot disappear, nor can a component not present in the reactants suddenly appear in the products.

Check the answer of this question online at QuizOver.com:

Question: [AB CD - AD BE Is this a legitimate example OpenStax College Anatomy](#)

4.1.11. When you do a load of laundry, why do you not just drop a bar of so...

Author: OpenStax College

When you do a load of laundry, why do you not just drop a bar of soap into the washing machine? In other words, why is laundry detergent sold as a liquid or powder?

- Recall that the greater the surface area of the reactants, the more quickly and easily they will interact. It takes energy to separate particles of a substance. Powder and liquid laundry detergents, with relatively more surface area per unit, can quickly dissolve into their reactive components when added to the water.

Check the answer of this question online at QuizOver.com:

Question: [When you do a load of laundry why do you OpenStax College Anatomy](#)

4.1.12. The pH of lemon juice is 2, and the pH of orange juice is 4. Which ...

Author: OpenStax College

The pH of lemon juice is 2, and the pH of orange juice is 4. Which of these is more acidic, and by how much? What does this mean?

- Lemon juice is one hundred times more acidic than orange juice. This means that lemon juice has a one hundred-fold greater concentration of hydrogen ions.

Check the answer of this question online at QuizOver.com:

Question: [The pH of lemon juice is 2 and the pH of OpenStax College Anatomy](#)

4.1.13. During a party, Eli loses a bet and is forced to drink a bottle of ...

Author: OpenStax College

During a party, Eli loses a bet and is forced to drink a bottle of lemon juice.

Not long thereafter, he begins complaining of having difficulty breathing, and his friends take him to the local emergency room. There, he is given an intravenous solution of bicarbonate. Why?

- Lemon juice, like any acid, releases hydrogen ions in solution. As excessive H^+ enters the digestive tract and is absorbed into blood, Eli's blood pH falls below 7.35. Recall that bicarbonate is a buffer, a weak base that accepts hydrogen ions.
By administering bicarbonate intravenously, the emergency department physician helps raise Eli's blood pH back toward neutral.

Check the answer of this question online at QuizOver.com:

Question: [During a party Eli loses a bet and is OpenStax College Anatomy Quest](#)

4.1.14. If the disaccharide maltose is formed from two glucose monosacchari...

Author: OpenStax College

If the disaccharide maltose is formed from two glucose monosaccharides, which are hexose sugars, how many atoms of carbon, hydrogen, and oxygen does maltose contain and why?

- Maltose contains 12 atoms of carbon, but only 22 atoms of hydrogen and 11 atoms of oxygen, because a molecule of water is removed during its formation via dehydration synthesis.

Check the answer of this question online at QuizOver.com:

Question: [If the disaccharide maltose is formed from OpenStax College Anatomy](#)

4.1.15. Once dietary fats are digested and absorbed, why can they not be re...

Author: OpenStax College

Once dietary fats are digested and absorbed, why can they not be released directly into the bloodstream?

- All lipids are hydrophobic and unable to dissolve in the watery environment of blood. They are packaged into lipoproteins, whose outer protein envelope enables them to transport fats in the bloodstream.

Check the answer of this question online at QuizOver.com:

Question: [Once dietary fats are digested and absorbed OpenStax College Anatomy](#)