

HOW CHEMICAL REACTIONS HAPPEN ?



Chemical reactions happen around us all the time. Some happen all by themselves like when plants use photosynthesis to chemically change energy from the sun into food. People also cause chemical reactions to happen. Cooking food and burning fuel cause chemical reactions. A chemical reaction is a process when one or more substances are changed into other substances. How do they happen? It all can be explained by atoms.

Electrons surround the nucleus of an atom in layers called shells. The first shell, closest to the nucleus, is full with only two electrons. The second shell is full with eight electrons, and the third shell will also hold eight electrons. For the most stable atom, the outer shell needs to be full of electrons. To get a full shell, atoms will take or give up electrons to other atoms or share electrons with another atom. When this happens, a chemical reaction has taken place and a chemical bond has formed.

To better understand this, let's look at the sodium atom. Sodium has eleven electrons. Its first shell is full with two electrons, and its second shell is full with eight more electrons, making ten electrons. But since sodium has eleven electrons, it has one all alone in the third shell. To become more stable, sodium will easily give up that one electron so it will have a full shell. The extra electron will go to another atom that needs one electron to have a full shell. Chlorine is a good example. Chlorine has seventeen electrons: two in the first shell, eight in the second shell, and seven in the third shell. To be stable, chlorine needs to pick up another electron. It can take one electron from sodium. This forms a bond between the atoms of sodium and chlorine. A new compound, sodium chloride, or table salt, has been made.

(Adopted from www.edhelper.com/ReadingComprehension_37_152.html)

I- Comprehension/interpretation:

1. the appropriate title to this text is:

- a. Electrons and Atom b. How do Chemical Reactions happen ? c. Sodium reactions .

2. Say whether the following statements are true, false or not mentioned

- a. Chemical reactions may happen spontaneously.
b. Plants use photosynthesis to chemically change energy from the sun into sugar.
c. Taking or leaving electrons lead to new substances.
d. The sodium has eleven electrons, three ones are in the third shell.

3. Answer the following questions according to the text:

- a. what is a shell ?
- b. how does a chemical reaction happen ? (be brief)
- c. how many electrons does sodium have ?

4. in which § the writer defines a chemical reaction ?

II- Text Exploration:

1. Synonyms:

- a. encircle=..... b. difficult=.....

2. Antonyms:

- a. worse≠..... b. empty≠.....

3. Put the verbs between brackets into the correct form:

- a. if you (mix) oxygen with hydrogen, you (get) water.
- b. he (understand) if you just explain why you (come) late.
- c. if I (be) you, I (apologize) for that indecent behavior.
- d. I (meet) him, if I (be) a little bit earlier.
- e. this jacket (suit) you, if it (be) the right size.

4. Fill the gaps with words:

Kinds - mix - element - reaction

A chemical can happen when you two or more chemical elements together. A chemical is made of only one kind of atom. There are more than 100 different of atoms. Atoms are much too small to see.

5. Cross out the silent letters in the following words:

Blue – handkerchief – walking – slight – dare – ultimate.

III- Written Expression:

Suppose that you were in a dilemma. In no more than 15 lines, write a letter to an agony aunt, in which you seek for help.

Use the following notes:

- introduce yourself: name/age/occupation.
- introduce your problem.
- state your difficulties and situations.

BETTER THE DEVIL YOU KNOW THAN THE DEVIL YOU DON'T