



## Test - Lesson 1 – The Intramolecular Bond

Page 1

1. Which statement about electrons is not true?
- (A) Electrons have a negative electrical charge.
  - (B) Electrons prevent two atoms from touching.
  - (C) For every electron around a nucleus, there is a proton in the nucleus.
  - (D) Electron attraction to the nucleus makes it difficult to remove electrons from an atom.
2. Van der Graaf generators \_\_\_\_\_.
- (A) produce electrons from neutrons
  - (B) strip electrons off atoms
  - (C) generate protons from the nucleus
  - (D) transfer protons from the atomic nuclei to the dome on top
3. The periodic table is made up of over 100 different elements. Each atom of an element has a nucleus and one or more electrons orbiting around it. The simplest atom is \_\_\_\_\_.
- (A) Hydrogen
  - (B) Helium
  - (C) Lithium
  - (D) Beryllium
4. Each of the following statements about protons is true, except:
- (A) Protons are found in the nucleus.
  - (B) Protons have a positive electrical charge.
  - (C) Protons are slightly larger than electrons.
  - (D) Protons repel each other until they get very close to each other.
5. The most important feature that distinguishes one element from another is \_\_\_\_\_.
- (A) the number of electrons orbiting the nucleus
  - (B) the number of protons in the nucleus
  - (C) the number of rings around the nucleus
  - (D) the number of neutrons in the nucleus
6. Each of the following statements about neutrons is true, except:
- (A) Neutrons are equal to a proton and an electron.
  - (B) Neutrons have no electrical charge.
  - (C) Neutrons have a strong force.
  - (D) Neutrons prevent electrons from being pulled into the nucleus.
7. Which statement about ions is untrue?
- (A) An atom with more electrons than protons is an ion.
  - (B) An atom with more protons than electrons is an ion.
  - (C) An ion has no overall electrical charge.
  - (D) A neutral atom can be made into either a positive ion or a negative ion.

8. The reasons you get shocked when touching a metal doorknob after walking across a carpet include all but the following:

- (A) Metals readily release their electrons from the doorknob.
- (B) Electrons are rubbed off the carpet.
- (C) Electrons repel each other.
- (D) Electrons can be removed from the nucleus they're orbiting.

9. The reason things never actually touch each other is that \_\_\_\_\_.

- (A) the electrons around each atom repel every other atom
- (B) nuclear charges repel each other
- (C) molecular configuration blocks actual contact between atoms
- (D) at molecular distances, the anti-gravitational strong force becomes active

10. Protons are able to remain close together in the nucleus because \_\_\_\_\_.

- (A) electrical repulsion drops off rapidly at extremely close distances
- (B) the protons pair up and spin in opposite directions
- (C) their mutual repulsion is offset by the electrons orbiting the nucleus
- (D) at extremely close distances the strong force becomes active

11. Which statement about neutrons is untrue?

- (A) Neutrons exert a strong force.
- (B) Neutrons nudge protons apart.
- (C) Neutrons have both a negative and positive electrical charge.
- (D) Neutrons weigh almost the same as a proton.

12. The inert elements \_\_\_\_\_.

- (A) may bond with each other but not with other elements
- (B) include hydrogen, helium, neon, and argon
- (C) all have filled outer rings
- (D) form gases as paired atoms

13. Which statement is untrue?

- (A) Atoms bond to shed themselves of energy.
- (B) Atoms bond by manipulating their electrons.
- (C) The bond formed when two atoms bond is their intermolecular bond.
- (D) Knowing how two atoms bond predicts the properties of the molecule.

14. Which of the following does the Law of Entropy predict?

- (A) Someday every place in the universe will be the same temperature.
- (B) Atoms will bond if they can gain energy.
- (C) If necessary to conform with the Law of Entropy, energy can and will be destroyed.
- (D) Someday all the energy in the universe will be completely used up.

15. In going from a neutral lithium atom to a positively charged lithium ion, a lithium atom \_\_\_\_\_.

- (A) gains an electron
- (B) loses an electron
- (C) gains a proton
- (D) loses a proton

16. Different isotopes of an element have different \_\_\_\_\_.

- (A) nuclear charge
- (B) numbers of electrons
- (C) numbers of protons
- (D) numbers of neutrons