ANSWER THOSE Three ASSIGNMENT ONE PAGE FOR EACH ASSIGNMENT

Assignment 1

Briefly define the following terms:

Matter:

Element:

Compound:

Atom:

Proton:

Electron:

Neutron:

Nucleus:

Atomic number:

Mass number:

Atomic mass:

Fill in the blank:

1. Atoms of a particular element that differ in mass number are called _____.
2. The different mass number is due to different numbers of _____ in the nucleus.
3. Write down the name of one type of carbon isotope: _____.

4. How many protons does it have? _____
5. How many neutrons does it have? _____
6. How many electrons does it have? _____
7. What is its mass number? _____
8. Write down the name of a *different* type of carbon isotope:

   _____.
9. What is its mass number? _____
10. Does the mass number differ from that of the first carbon isotope? Why?
11. Explain how electrons determine the chemical properties of an atom:
12. Tell me something you now know about hydrogen bonds and do not just copy the title of the section in the book.
13. Why is life's molecular diversity based on carbon? Your explanation should demonstrate and understanding of bonding, and it should include an example of an organic molecule that is based on a carbon chain.
14. What is an isomer?
15. Describe each of the chemical groups listed here. Name one type of biological molecule that contains each chemical group.

Phosphate group: Amino Acid:

16. How are polymers made in cells? How are they broken down? Demonstrate your understanding of each process.

17. What is a polysaccharide?

18. How do phospholipids associate with water to provide structure to cell membranes

19. Explain the relationship between structure and function for proteins. Include the term denaturation in your explanation. Name one secondary structure of proteins

20. How do nucleotide polymers form? Name two nucleic acids and explain their respective roles in gene expression.

21. List and describe the fifteen different structures found within eukaryotic cells.

22. Group these fifteen structures on the basis of four main functions.

Assignment 2

1. **Find an example of a polar molecule other than water. Draw an electron distribution diagram for this molecule. Label the following items in your drawing**:

- Molecular formula
- Correct number of protons for each atom
- Correct number of neutrons for each atom
- Nucleus
- Correct number and distribution of electrons for each atom (don't forget to use accurate electron shells and orbitals).
- Electrons involved in covalent bonding
- A minus sign (-) indicating the negatively charged area of the molecule
- A plus sign (+) indicating the positively charged area of the molecule

2. Use chemical shorthand to indicate the chemical reactions for photosynthesis and cellular respiration. Use a few sentences to summarize what happens in each reaction. What is the biological context for each reaction (i.e. where does it happen and why)*?*

3. **Explain osmosis. Include the listed terms in your explanation.**

- Solvent
- Solutes
- Hypotonic
- Hypertonic

- Semipermeable membrane
- Osmolarity

Assignment 3

Explain the concept of descent with modification by relating it to the following skeletal features. Be sure to describe how evolutionary modifications are related to environmental factors such as habitat and diet. Write bullet points, upload drawings, whatever. Just make sure you understand and reference specific structural examples.

- Placement of the Foramen Magnus
- Structure of the Zygomatic Arch
- Dentition and Dental Formula