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UAB CH 235 SI

***Session 1***

**Part 1**

Please define the following terms. You may use your book, notes, or neighbor.

1. Organic Chemistry:
2. Aufbau (“Build-Up”) Principle:
3. Pauli Exclusion Principle:
4. Hund’s Rule:
5. Cation:
6. Covalent bond:
7. Lone-pair electrons:

**Part 2**

Review parts of an atom, specifically **carbon**.

1. Carbon has \_\_\_\_\_\_ neutrons.
2. Carbon has \_\_\_\_\_\_ protons, which represents the atomic number of an atom.
3. Carbon has an atomic mass of \_\_\_\_\_\_, composed of protons and neutrons.
4. Carbon has \_\_\_\_\_\_ electrons.
5. The outer shell orbital holds \_\_\_\_\_ valence electrons.

**Part 3**

Fill in the **energy-level** diagram for each atom.

|  |  |  |
| --- | --- | --- |
| Carbon (6 e-) | Oxygen (8 e-) | Neon |

**Part 4**

Use the example given below to help you identify the **electron configuration** of each atom.

6C = 1s22s22p2

|  |  |  |  |
| --- | --- | --- | --- |
| 1H = | 2He = | 8O = | 19K = |

Abbreviate the following electron configurations

6C = [He] 2s22p2 (Abbreviated)

|  |  |
| --- | --- |
| 8O = | 19K = |
| 17Cl = | 11Na = |

**SESSION 2**

**Part 5:** Formal Charge

Calculate the formal charge for all **non-hydrogen** atoms.

1.  b)  c)  d)

**Part 6:**

Draw the Lewis Dot Structure for each species and indicate its molecular geometry.

|  |  |  |
| --- | --- | --- |
| Species | Lewis Dot Structure | Molecular Geometry |
| CCl4 |  |  |
| BF3 |  |  |
| CO |  |  |
| NH3 |  |  |
| NH4+ |  |  |

**Part 7:** Dipole Moments

Which of the following molecules are polar? If polar, indicate the direction of the dipole moments **and** the net dipole moment.

1.  b)  c) 

1. d) 

e)  f)  g) 