**Chemistry 20 – Lesson 9**

**Lewis diagrams**

**/42**

**Part A**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Atom | # Valence e- | # Orbitals | Lewis Diagram | # Lone pairs | # Bonding e- |
| S | 6 | 4 | • S•• •• • | 2 | 2 |
| Si | 4 | 4 | • Si• ••  | 0 | 4 |
| P | 5 | 4 | • P•• ••  | 1 | 3 |
| Cl | 7 | 4 | • Cl• •• •• • | 3 | 1 |
| Br | 7 | 4 | • Br• •• •• • | 3 | 1 |
| Be | 2 | 4 | Be••  | 0 | 2 |

**Part B**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Molecular****Substance** | **Molecular Formula** | **Lewis Diagrams of each atom** | **Lewis diagram of Molecule**• •F• •• •• • | **Structural diagram** |
| chloroform | CHCl3 | • Cl• •• •• •• C• •• • H | • •F• •• •• •• •F• •• •• •• •C• •• •• •H | HHHCCl |
| ammonia | NH3 | • N•• •• • H | • •N• •• •• •HHH | NHHH |
| water | H2O | • H• O•• •• • | H• •O• •• •• •H | OHH |
| bromine | Br2 | • Br• •• •• • | • •Br• •• •• •• •Br• •• •• •O• •• •• •• •F• •• •• •F• •• •  | BrBr |
| oxygen difluoride | OF2 | • F• •• •• •• O•• •• • | H | CFHHHOFF |
| fluoromethane | CH3F | • F• •• •• •• C• •• • H | • •C• •• •• •• •F• •• •HH |  |
| chlorine | Cl2 | • Cl• •• •• • | • •Cl• •• •• •• •Cl• •• • | ClCl |
| nitrogen triodide | NI3 | • N•• •• • I• •• •• • | • •N• •• •• •• •I• •• •• •• •I• •• •• •• •I• •• •• • | NIII |
| carbon tetrafluoride | CF4 | • F• •• •• •• C• ••  | • •C• •• •• •• •F• •• •• •• •F• •• •• •• •F• •• •• •• •F• •• •• •H | CFFFF |
| dibromo-chloromethane | • C• •• CHBr2Cl | • Br• •• •• •• Cl• •• •• •• H | • •Br• •• •• •C• •• •• •Cl• •• •• •• •Br• •• •• • | CBrBrHCl |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| • •Si• •• •• •• •F• •• •• •• •F• •• •• •• •F• •• •• •• •F• •• •• •silicon tetrafluoride | SiF4 | • F• •• •• •• Si• ••  |  | SiFFFF |
| hydrogen chloride | HCl | • Cl• •• •• •• H | H• •Cl• •• •• • | ClH |
| methanol | CH3OH | • C• •• • H• O•• •• • | HCOHHHHHH• •C• •• •• •• •O• •• •H |  |
| ethanol | C2H5OH | H• C• •• • H• O•• •• • | CCHHHOHHHHHH• •C• •• •• •• •C• •• •• •• •O• •• •• •HH |  |
| hydroxide | OH– | • H• O•• •• • | H−• •O• x• •• • | OH− |