**Homework 1 – CHEM 244**

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|  | **Name** |
|  | **Student ID** |
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| 1. Write an equation for the reaction of sodium atoms (Na) with chlorine atoms (Cl).
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| 1. Write an equation for an electron-dot structure of a fluorine molecule from two fluorine atoms.
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| 1. Draw an electron-dot structures for dichloromethane (also called methylene chloride), CH2Cl2, and trichloromethane (chloroform), CHCl3.
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| 1. Draw an electron-dot structure for carbon monoxide, CO.
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| 1. What is the maximum capacity of elections in shells for the element Boron “B” then describe the following;
2. Draw the energy level
3. Draw the valance electrons in shells
4. Draw the Electron-dot structures
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| 1. Draw the carbon sp3, sp2 and sp hybrid orbitals, then describe the geometrical name and angle for all
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| 1. Which of the following has zero dipole moment?
2. NH3 b) HCl c) BF3 d) BeF2 e) SnCl2 f) SnCl4
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| 1. What is the bonding type for the following and prove that?
2. CaCl2 b) Mg(OH)2 c) NH3 d) H2O
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| 1. For the compound shown below;

Answer the following questions; 1. What functional groups are present in compound A?
2. What is the molecular formula of A?
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| 1. What is the molecular formula of an alkane with seven carbon atoms?
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| 1. What is the molecular formula of a cycloalkane with 5 carbon atoms?
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| 1. Which of the following are alkanes and prove that?
2. C7H16 b) C7H12 c) C8H16 d) C29H60
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| 1. Draw the chemical structure for the following groups;
2. *Iso*propyl b) *Iso*butyl c) n-propyl d) *tert*-butyl
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| 1. Draw the chemical structure for the following compound;

*trans*-1,2-dimethylcyclobutane |
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| 1. Draw the chemical structure for the following compound;

4-cyclopropyl-2,3,4-trimethylnonane |
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| 1. What is the IUPAC name for the following compound;

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| 1. Draw the chemical structure for the following compound;

3-chloro-4-ethyl-3,6-dimethylheptane |
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| 1. Complete the following combustion equation;

C3H8 + …. O2 $\rightarrow $ …. CO2 + ………. + ………. |
| 1. Complete the following reactions;

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| 1. What is the condition of the following reactions?

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