

LIZARDI BHI	2008-09	Topics:	MARKS:
Chemistry	3rd term	PT, Bonding	
2009-May-19		Organic Chemistry	

Exercise #1

The atomic numbers of 4 elements are:

X=20, Y=16, Z=19, R=17

Determine and justify

- The alkaline and halogen elements
- Order their electronegativities
- Their ionic valences
- Compare their ionic sizes
- When X and R combine, the type of substance and formula of the resulting compound

2 points

Exercise #2

We have the following substances: sodium chloride, chlorine, diamond, potassium chloride, water. Do the following:

- Determine the type of bond or force involved ("broken") in the melting process
- Order the compounds according to their melting point
- Determine their electric properties

2 points

Exercise #3

Study the following molecules and determine:

- The type of hybridization of each carbon atom or central atom
- The type of covalent bonds (sigma or pi)
- The bond-angles
- The molecular shape

1) HCOOH 2) H₂O 3) CH ≡ CH 4) NH₃

2 points

Exercise #4

Complete the following reactions and name each compound:

- The combustion of ethanol
- The oxidation of propanal
- The dehydration of 2-butanol
- An esterification process for methanoic acid
- The conversion from 2-bromobutane to butanone

2 points

Exercise #5

Define:

- Electronic orbit and orbital
- sigma and pi covalent bonds
- oxidation of primary, secondary and tertiary alcohols
- geometric isomery
- n and l quantum numbers

2 points