

**Student Name:**

**Section:**

**Student University ID:**

**10/01/1430**

**Midterm Exam  
(2<sup>nd</sup> Class Exam)**

**(15 Marks)**

1-a) in the following hydrocarbons how many carbon atoms are in sp, sp<sup>2</sup>, sp<sup>3</sup> hybridization state?

**H<sub>2</sub>C=CHCH<sub>2</sub>Cl ( 1 carbon in sp<sup>3</sup> state, and 2 carbon atoms in sp<sup>2</sup> state)**

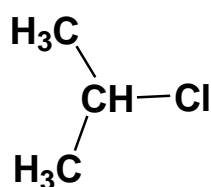
**HC≡CCH<sub>2</sub>Cl (1 carbon in sp<sup>3</sup> state, and 2 carbon atoms in sp state)**

1-b) Give the IUPAC names for the following compounds:

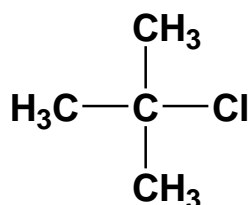
**H<sub>3</sub>C—C≡C—CH<sub>3</sub>                      2-Butyne  
(But-2-yne)**

**HC≡C— $\overset{\text{H}_2}{\text{C}}$ — $\overset{\text{H}_2}{\text{C}}$ — $\overset{\text{CH}_3}{\underset{\text{H}}{\text{C}}}$ —CH<sub>3</sub>                      5-Methyl-1-hexyne  
(5-Methylhex-1-yne)**

1-c) Classify the following alkyl halides

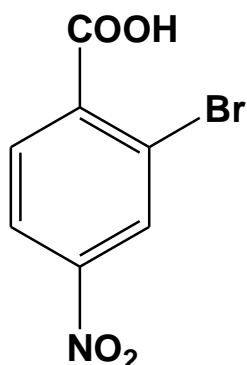


**Secondary alkyl halide  
(2<sup>o</sup>)**

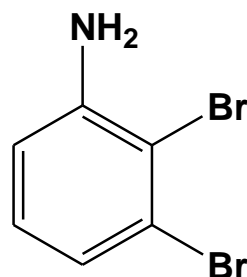


**Tertiary alkyl halide  
(3<sup>o</sup>)**

1-d) Give the IUPAC names for the following compounds:

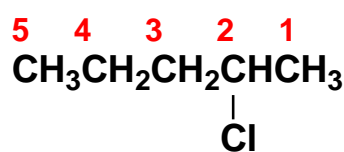


2-Bromo-4-nitrobenzoic acid

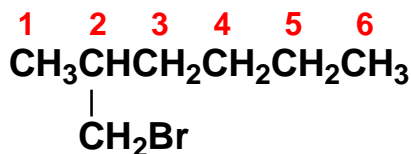


2,3-Dibromobenzaniline

1-e) Write structures corresponding to the following names:



2-Chloropentane



2-(Bromomethyl) hexane

2-a) Alkyl halides are **insoluble** in water, but **soluble** in diethylether.

2-b) alkynes are **insoluble** in ethanol but soluble in **ether, benzene and carbon tetrachloride**

2-c) Alkyl Halides are more denser than **alkanes** and **water**

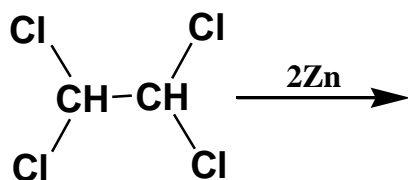
2-d) Each carbon atom in benzene is **sp<sup>2</sup>** hybridized with bond angle of **120** degree.

2-e) fluoride is the **lowest** boiling compound while an iodide is the highest.

3- Chose the correct product of the following reactions:



- a)  **$\text{C}_2\text{H}_5\text{MgBr}$**     b)  $\text{C}_2\text{H}_5\text{OH}$



- a)  **$\text{HC}\equiv\text{CH}$**     b)  $\text{CH}_2=\text{CH}_2$

