## **WORKSHEET III\_Keys**

1. Name the following compounds. Indicate the steochemistry (if any) and label the hydroxyl groups (if any) as primary, secondary or tertiary.

Α

3-bromo-5-ethyl-6-methoxy-1,4-dioxan-2-ol В

$$O_2N$$

2-bromo-5-isopropyl-3-nitrooxane

C

4-bromo-3-methyloxane

D

2-sec-butyl-4-isopropyl oxetan-3-ol

E

4-bromo-2-isopropyl-5-methyloxolan-3-ol

F

1-chloro-1,2-epoxy-5-methoxy -3,4-dimethylpentane

G

4-ethoxycyclohex-1-ene

Н

2-isobutyl-4-methoxyoxolane

2-chloro-5,6-epoxy-4-methylnonane

K

4,5-epoxyheptan-2-ol

M

propylthiobenzene

0

cyclopent-3-enethiol

Q

2-chloro-1-isobutoxy butane

J

L

3-chloro-2-isopropyloxetane

N

2-chloro-3-propyl-1,4-dioxane

P

6-bromo-5-methoxy-4-methylheptane-2-thiol

R

4-chloro-5-ethylthio-2-methoxycyclohexanol

S

3,4-epoxy-6-isopropyhexan-1-ol

2. Give the major product(s) of each of the following reaction (after workup with aqueous acid)

Α

В

$$H_3C$$
 $H_3C$ 
 $H_3CH_2SH$ 
 $H_3CH_2CS$ 
 $H_3CH_2CS$ 
 $H_3CH_2CS$ 
 $H_3CH_2CS$ 
 $H_3CH_2CS$ 
 $H_3CH_2CS$ 

C

$$\begin{array}{c|c}
\hline
 & 1) \text{ LiAlH}_4 \\
\hline
 & 2) \text{ H}_2\text{O}
\end{array}$$
Et

D

$$\begin{array}{c}
O \\
CH_3
\end{array}
\begin{array}{c}
1. (CH_3)_2 CHMgCI \\
\hline
2. H_3O^+
\end{array}$$
OH

Ε

F

$$\stackrel{O}{\longrightarrow} \frac{\text{NaNH}_2}{\text{NH}_3} + \text{NO} \longrightarrow \frac{\text{NH}_2}{\text{NH}_2}$$

G

Н

ı

$$\begin{array}{c} OH \\ \hline \\ H_3O^+ \\ \hline \\ OH \\ \hline \\ OH \\ \end{array}$$

J

K

L

3. How would you prepare the following compounds from the given starting materials?

Α

В

C

D

Ε

F

$$\begin{array}{c|c} & & & \\ & & \\ \hline \\ Et_2O \end{array} \\ \begin{array}{c} & \\ \hline \\ 2. \ H_3O^+ \end{array} \\ \begin{array}{c} & \\ \hline \end{array} \\ \begin{array}{c} OH \\ \hline \end{array}$$

G

$$\begin{array}{c}
CI \\
Mg \\
Et_2O
\end{array}$$

$$\begin{array}{c}
MgCI \\
2. H_3O^+
\end{array}$$

$$\begin{array}{c}
PCI_3
\end{array}$$

$$CI$$

Н

OH Na ONa 
$$\frac{1.00}{2. H_3O^+}$$
 OH