## Organic Chemistry (I) Chapter 9

#### 1. Predict the major product of the following reaction.



- A. (
- B. Br
- C. PBr<sub>2</sub>

- D. Br
- E. OPBr<sub>2</sub>

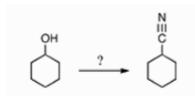
#### 2. What reagent would be required to accomplish the transformation shown?

 $A. Br_2$ 

- B. HBr, Δ
- C. NaBr, NaOH

- D. Br<sub>2</sub>, light
- E. NaOBr, heat

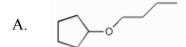
# 3. Which of the following reactions could be used to make cyclohexanecarbonitrile from cyclohexanol?

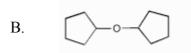


- A. 1. PBr₃
  2. NaCN
- D. 1. NaH 2. HCN
- B.  $\frac{NaCN}{H_2SO_4}$
- E. Two of these would work.
- C. 1. CH<sub>3</sub>SO<sub>2</sub>Cl,
  pyridine

  2. NaCN

#### 4. Predict the major product of the following reaction sequence.







D. (

## 5. What product(s) would you expect to obtain from the following reaction?

$$H_{M_{1}}$$
  $C$   $CH_{2}$   $CH_{3}$   $CH_{3}$   $CH_{3}$   $CH_{3}$   $CH_{3}$ 

#### 6. Predict the major product of the following reaction.

E.

$$\begin{array}{c|c} & & \\ \hline & & \\ & & \\ \end{array} ?$$

### 7. Which of the following would NOT efficiently accomplish the reaction shown?

A. NaH

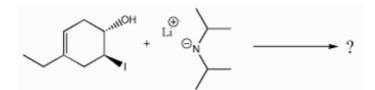
B. Na (metal)

 $C. -NH_2$ 

D. K (metal)

E. **-**OH

#### 8. What is the major product of the following reaction?



B.

C. .

D. Racemic mixture

#### 9. What reagent(s) would be appropriate to accomplish the conversion shown?

A. HCl

B. HNO<sub>3</sub>

 $C. H_2SO_4$ 

D. HBr

E.  $K_2Cr_2O_7 + H_2SO_4$ 

#### 10. Predict the major product of the following reaction sequence.

A. OMe

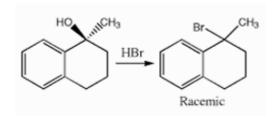
B.

C. OH

D.

E.

## 11. If the following reaction proceeds as indicated, what mechanistic pathway does it most likely follow?



- A. **E2**
- D. \$<sub>N</sub>1
- B. **E1**
- E. Free-radical halogenation
- C. S<sub>N</sub>2

#### 12. What is the major product of the following reaction?

#### 13. Which of the following reactions would efficiently provide the ether shown?

- A. CH<sub>2</sub>ONa + Br
- D. Two of these would work.
- $B. \qquad \bigcirc ^{CH_2Br} + \\ _{NaO} \downarrow \longrightarrow$
- E. All of these would work.
- C.  $OH_2OH_4$   $OH_2SO_4$

## 14. What major product would you expect from the following reaction?

$$B. \qquad \overset{\text{H}_3C}{\underset{\text{H}}{\smile}} c = c \overset{\text{CH}_2-\text{CH}_3}{\underset{\text{CH}_3}{\smile}}$$

C. 
$$H_3C - \stackrel{H}{\overset{Br}{\overset{}{_{I}}}} - \stackrel{Br}{\overset{}{\overset{}{_{I}}}} - CH_2 - CH_3$$
 D.

$$E. \quad \text{Br-CH}_2 - \begin{matrix} H & H \\ I & I \\ -C - C - CH_2 - CH_3 \\ I & I \\ H & CH_3 \end{matrix}$$

### 15. Which reagent will be useful for effecting the following transformation?

 $A.\;CH_{3}OH\:/\:H^{^{+}}$ 

B. 1. CH<sub>3</sub>MgBr / Et<sub>2</sub>O, 2. H<sub>3</sub>O<sup>+</sup>

C. 1. CH<sub>3</sub>O- Na<sup>+</sup>, 2. H<sub>3</sub>O<sup>+</sup>

D. 1. LiAlH<sub>4</sub>, 2. H<sub>3</sub>O<sup>+</sup>

 $E.\ CH_3OH\ /\ H_2SO_4$