

Page Points

You should have 4 pages. **Print your name legibly on each page now.**  
Blank sheets are available for scratch paper if you need them, but please put  
your answers on the test pages.  
**If something is not clear, raise your hand and ask!**

1 23

2 34

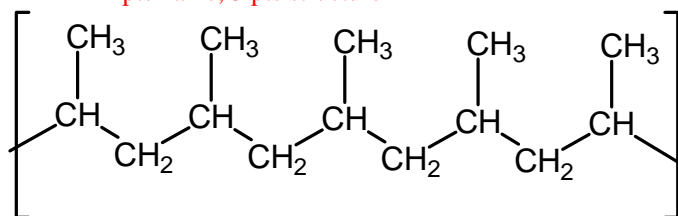
3 25

4 18

Points

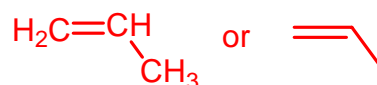
(5) 1. Name the following addition polymer, and draw the structure of the monomer which polymerizes to form it. Total 100

2 pts name, 3 pts structure



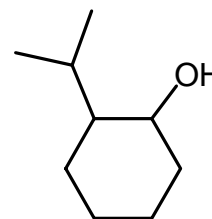
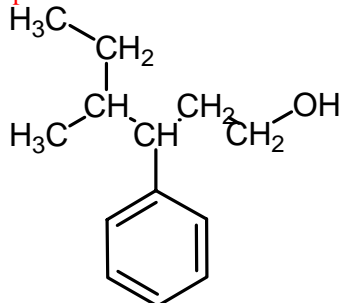
Polymer Name: polypropylene

Monomer Structure:



(8) 2. Name each of the following alcohols, and indicate whether it is a primary, secondary, or tertiary alcohol.

2 pts name; 2 pts class

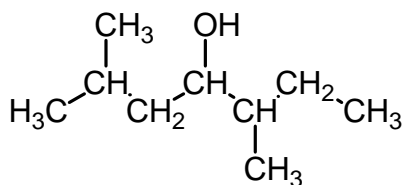


Name: 4-methyl-3-phenyl-1-hexanol Name: 2-isopropylcyclohexanol

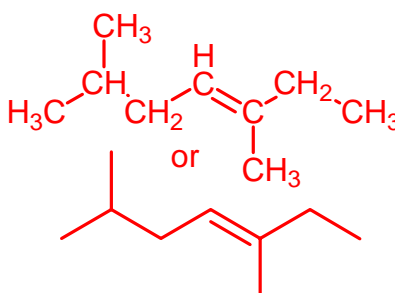
Class: primary Class: secondary

(10) 3. Draw the **Saytzeff dehydration product** and the **oxidation product** of the following alcohol. Give the **IUPAC name** for each product.

3 pts structure, 2- pts name

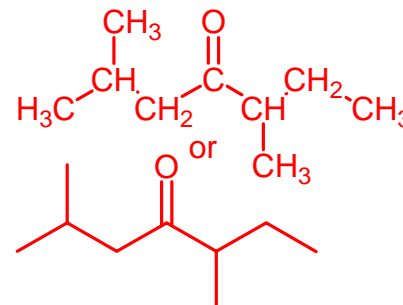


Dehydration Product:



Name: 3,6-dimethyl-3-heptene

Oxidation Product



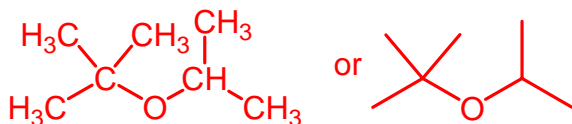
Name: 2,5-dimethyl-4-heptanone

- (5) 4. Draw the structure of **t-butyl isopropyl ether**, and give its IUPAC name:

3 pts structure, 2 pts name

**Structure:**

**Name:**



2-isopropoxy-2-methylpropane

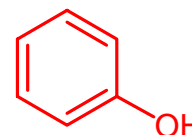
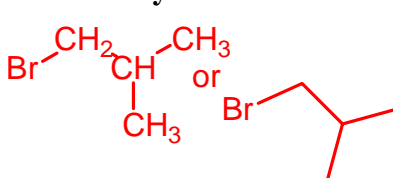
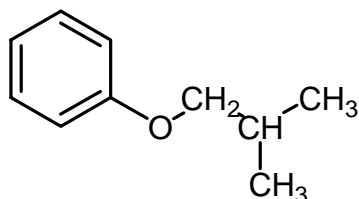
- (6) 5. The following ether can be synthesized by the Williamson synthesis from an alkyl bromide and an alcohol. Draw the structure of both the alkyl bromide and the alcohol that would be used.

3 pts each structure

**Ether**

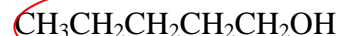
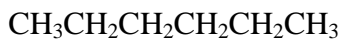
**Alkyl Bromide**

**Alcohol**



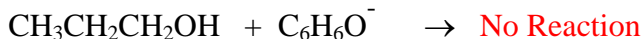
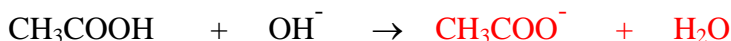
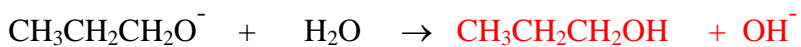
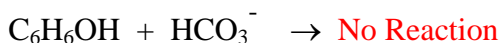
- (6) 6. For the following three compounds, **circle** the one that would have the highest boiling point, and **underline** the one that would have the lowest boiling point.

3 pts each



- (8) 7. Write the products of the following acid-base reactions. If the reaction does not proceed appreciably to the right, write **No Reaction**: (CH<sub>3</sub>COOH = acetic acid; C<sub>6</sub>H<sub>6</sub>OH = phenol).

2 pts each reaction



- (9) 8. Give the average oxidation number of carbon in the following compounds.

3 pts each

Compound:



C Oxidation Number:

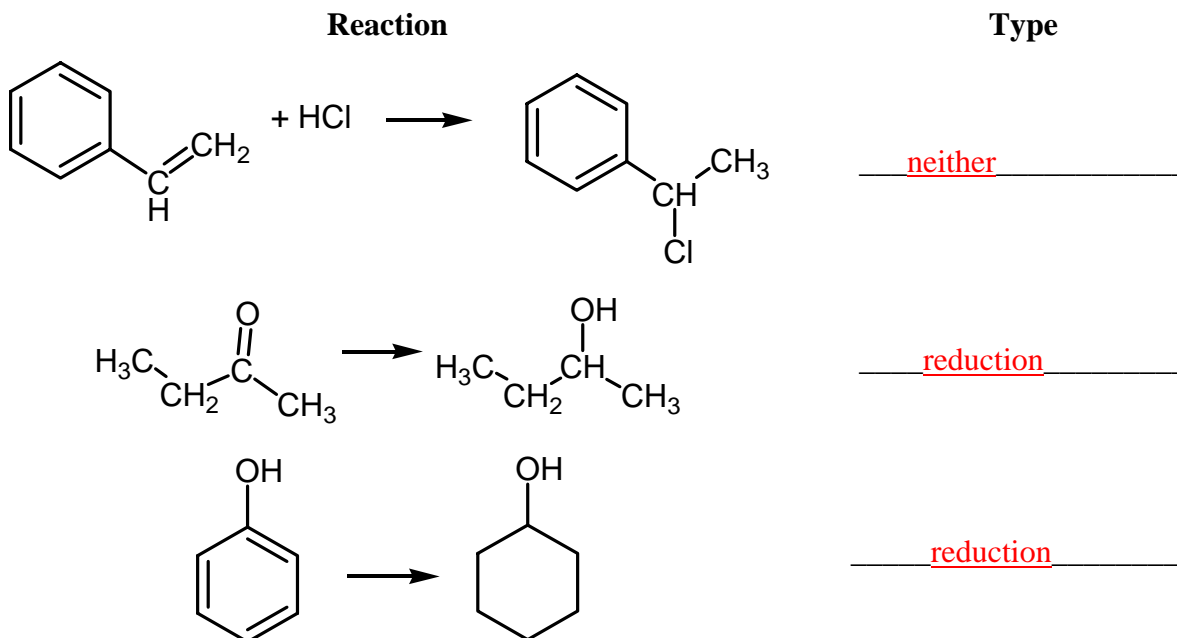
-2

-1

+2

(9) 9. Identify the each of following reactions as an **oxidation**, a **reduction**, or **neither**.

3 pts each



(6) 10. Benedict's reagent will oxidize aldehydes but not alcohols. What is the **oxidizing agent** in Benedict's reagent, and what **red product** is produced as a positive test for aldehydes?

**Oxidizing agent:**



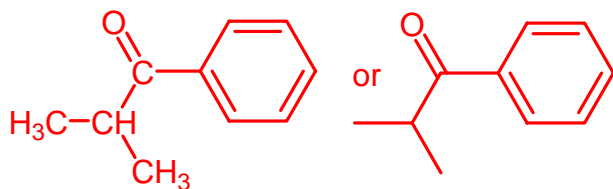
**Red product:**



(10) 11. Draw the structure, and give the IUPAC name for the following ketones:

3 pts structure, 2 pts name

**Isopropyl phenyl ketone**



**t-butyl ethyl ketone**



IUPAC Name:

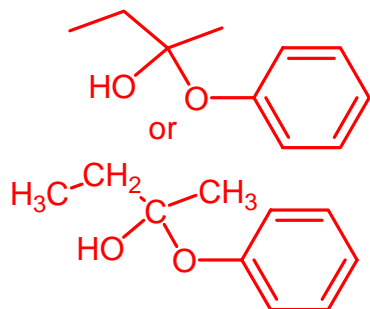
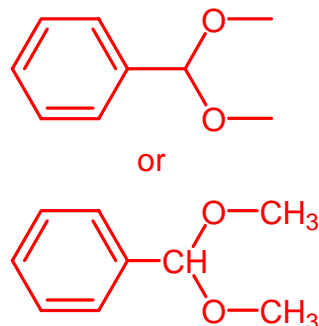
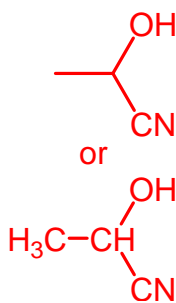
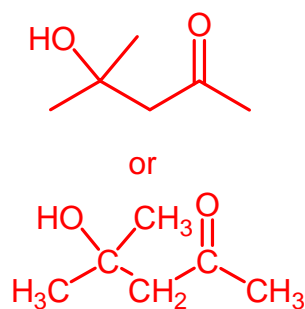
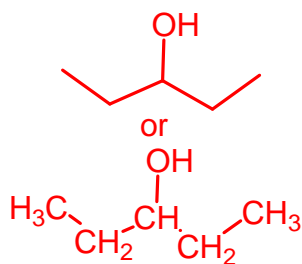
2-methyl-1-phenyl-1-propanone

IUPAC Name:

2,2-dimethyl-3-pentanone

(18) 12. Draw the structures of the following:

3 pts each structure

The **hemiketal** formed between **phenol** and **butanone**:The **acetal** formed between **methanol** and **benzaldehyde**:The **cyanohydrin product** formed between HCN and **acetaldehyde**:The **aldol (self-condensation)** product formed between two molecules of **acetone**.The product of the reaction of **3-pentanone** with **LiAlH<sub>4</sub>**.The **cyclic hemiacetal** formed by **4-hydroxybutanal**.