

1) What is a carboxylic acid and how is it made?

- A molecule with the functional group $\text{C}(=\text{O})-\text{OH}$
- Formed by oxidizing aldehydes

2) How do you name a carboxylic acid?

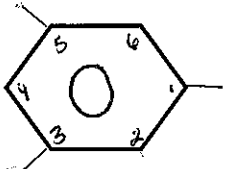
Change ending to -oic acid

3) Ketones cannot oxidize to carboxylic acids (True/False)


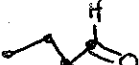

4) Give the name and molecular formula for the following carboxylic acids.

a. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH}$ pentanoic acid $\text{C}_5\text{H}_{10}\text{O}_2$

b. $\text{HOOC}\overset{1}{\text{C}}\text{H}_2\overset{2}{\text{C}}\text{H}_2\overset{3}{\text{C}}\text{H}_2\overset{4}{\text{C}}\text{H}(\text{CH}_3)\overset{5}{\text{C}}\text{H}_2\overset{6}{\text{C}}\text{H}_2\overset{7}{\text{C}}\text{H}_3$ 5-methyl heptanoic acid $\text{C}_8\text{H}_{16}\text{O}_2$


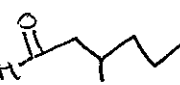

c.  3,5-dimethyl benzoic acid $\text{C}_9\text{H}_{10}\text{O}_2$

5) Oxidize the following alcohols to form carboxylic acids.

a. 1-Butanol  $\xrightarrow{[\text{O}]}$  $\xrightarrow{[\text{O}]}$ 
butanal butanoic acid

b. 1-Hexanol  $\xrightarrow{[\text{O}]}$  $\xrightarrow{[\text{O}]}$ 
hexanal hexanoic acid

c. 2-pentanol  $\xrightarrow{[\text{O}]}$  $\xrightarrow{[\text{O}]}$ N.R.
2-pentanone

d. 3-methyl-1-hexanol  $\xrightarrow{[\text{O}]}$  $\xrightarrow{[\text{O}]}$ 
3-methyl hexanal 3-methyl hexanoic acid

6) How are carboxylic acid salts formed?

Carboxylic acid + Strong base \rightarrow Carboxylic acid salt + H_2O