

Names: \_\_\_\_\_  
Chem 227 / Dr. Rusay

Sec. \_\_\_\_\_

### IR (Infrared) Spectroscopy

Refer to: <http://chemconnections.llnl.gov/Organic/Chem227/lehman-13.html>

**D) a)** Identify the function of each unknown from their respective Web Spectra; use the following choices: (ether, ketone, carboxylic acid, nitrile, ester, amide, amine, alcohol )

A	
B	
C	
D	
E	
F	
G	
H	

b) Unknown # \_\_\_\_ function: \_\_\_\_\_ Unknown # \_\_\_\_ function: \_\_\_\_\_

### II) Draw all of the different resonance structures for each:

A) benzaldehyde:

B) N,N-dimethyl benzamide:

C) benzophenone:

D) methylbenzoate:

E) benzoyl chloride:

III) a) List the respective compounds in order of decreasing carbonyl frequency.

\_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_

b) Briefly explain the basis for the differences in frequencies.

IV) UV spectroscopic analysis:

V)

Compound Name	Spectral Evidence for Assignment
<i>UNKNOWN A:</i>	
<i>UNKNOWN B:</i>	
<i>UNKNOWN C:</i>	
<i>UNKNOWN D:</i>	
<i>UNKNOWN E:</i>	

VI. Other questions: (Attach extra sheets as needed.)