1. Draw Lewis structures for the following molecules. E.g.,

- (a) methylamine, H₃CNH₂
- (b) acetamide, H₃CCONH₂
- (c) methyl azide, H₃CNNN
- 2. Draw the principal resonance structures for:
 - (a) acetamide
 - (b) methyl azide
 - (c) pentadienyl cation, CH_2 =CH-CH=CH- CH_2
- 3. Identify the hybridization for the non-hydrogen atoms in:
 - (a) acetamide
 - (b) capillin (Wade, p. 370)

H₃C—C
$$\equiv$$
C—C \equiv C

4. Order the following compounds by increasing boiling point.

CH₃CH₂CH₂CH₂CH₃

 $(CH_3)_4C$

CH₃CH₂CH₂CH₂NH₂

 $(CH_3)_2NCH_2CH_3$

CH₃CH₂CH₂CH₂OH

5. Order the following compounds by increasing dipole moment.

 CF_4

 $(CH_3)_3CH$

(CH₃)₂CO

 $(CF_3)_2CO$

6. Order the following compounds by decreasing acidity (increasing pK_a).

CH₃COOH

CF₃COOH

CH₃CH₂NH₃⁺

CH₃CH₂OH

CH₃CH₂NH₂

7. Identify the functional groups that contain hetereoatoms in:

CH

OCH₂CH₃

aspirin

phenacetin