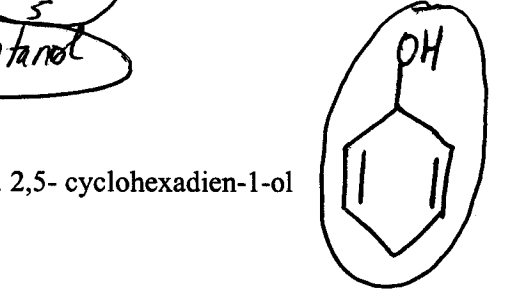
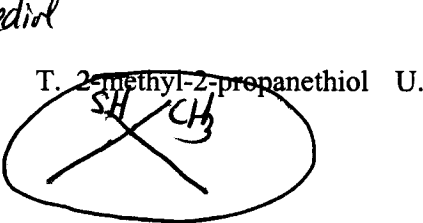
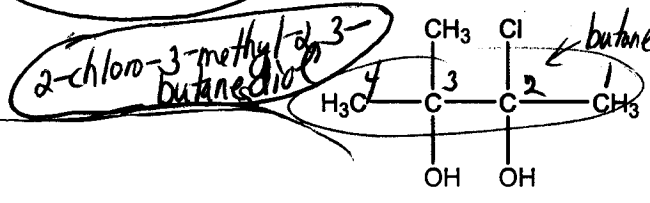
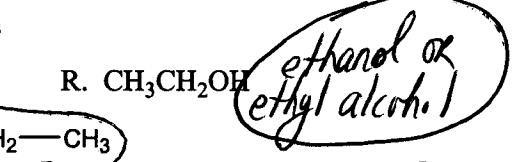
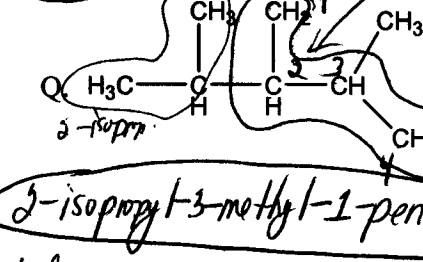
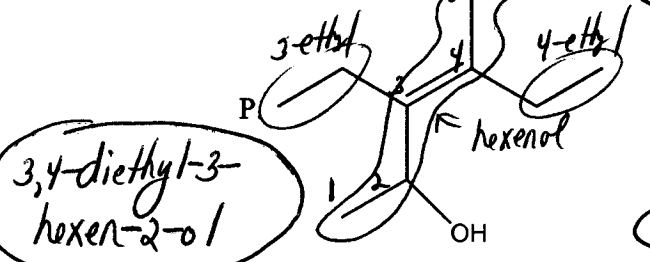
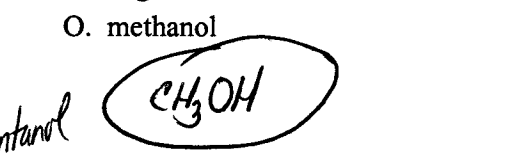
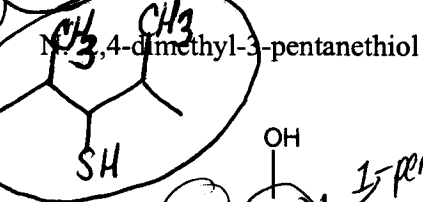
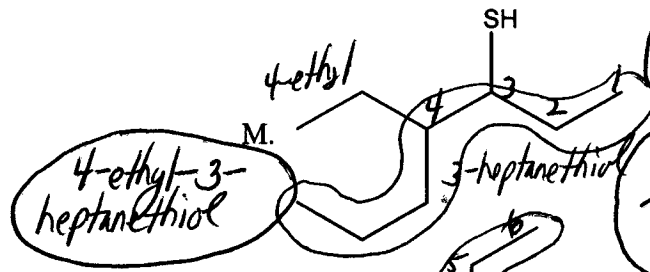
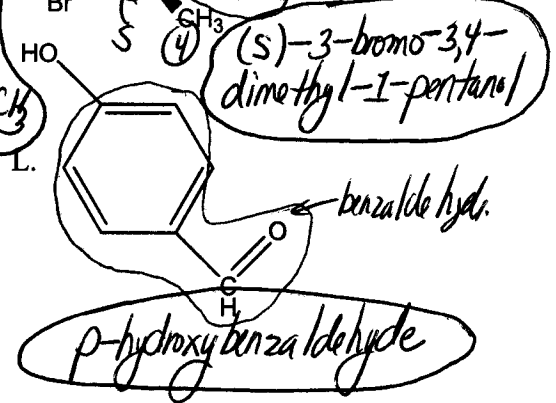
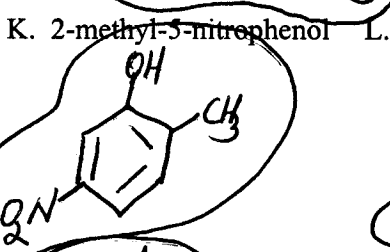
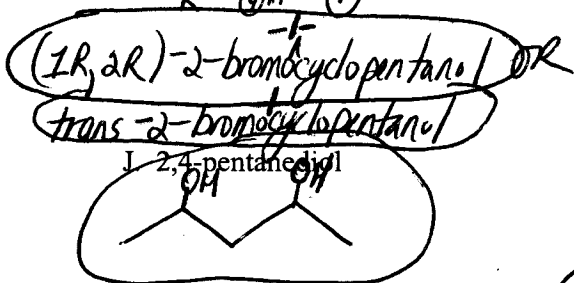
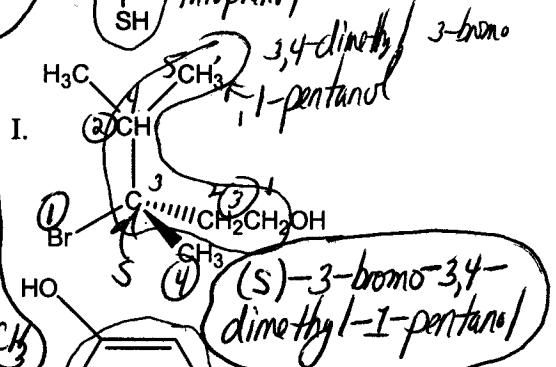
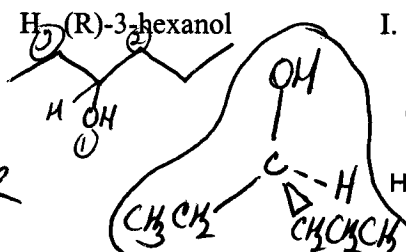
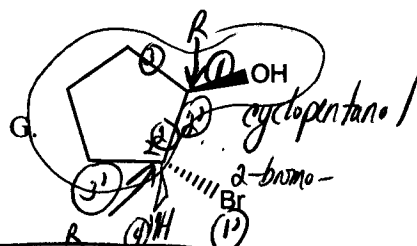
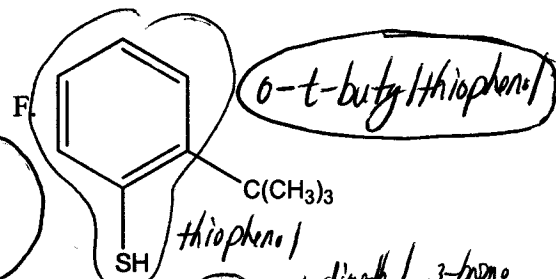
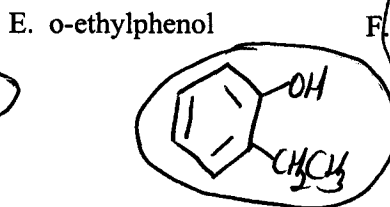
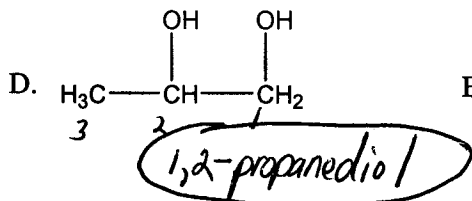
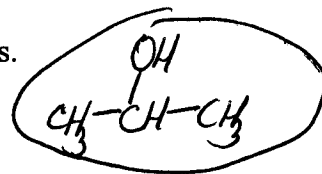
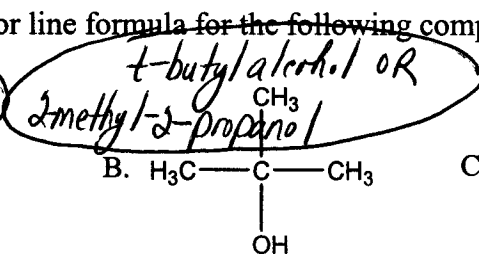
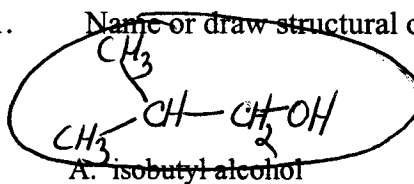


KEY

Chem 231: Problem Set #7 (on Chapter 7)

1. Name or draw structural or line formula for the following compounds.



BP

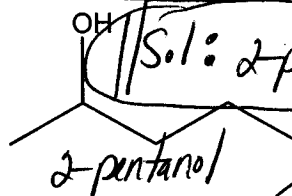
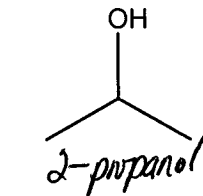
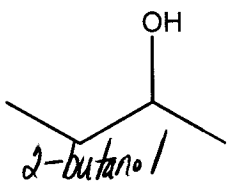
2. A.

Arrange the following compounds: 1) in order of decreasing boiling point and 2) in order of decreasing solubility in water.

1. As MW ↑ or as Length C-chain ↑, Strength LDFs ↑

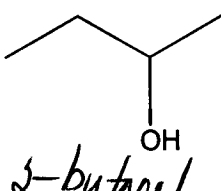
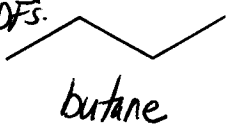
2. As Strength IMF's ↑, BP ↑

3. H-bond > Dipole-Dipole > LDFs.



BP: 2-pentanol > 2-butanol > 2-propanol

Sol: 2-propanol > 2-butanol > 2-pentanol



BP: 2-butanol > 2-butanone > butane

Sol: 2-butanol > 2-butanone or 2-butanone > butane. (Dipole-dipole + LDFs)

Solubility

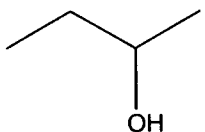
1. Like dissolves like.

As C-chain ↑, non-polar portion ↑ + substance less soluble in polar H₂O.

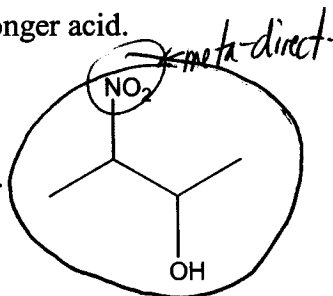
B.

Alcohols and phenols can act as weak acids. For each of the following pairs of alcohols, circle the stronger acid.

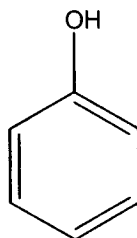
I.



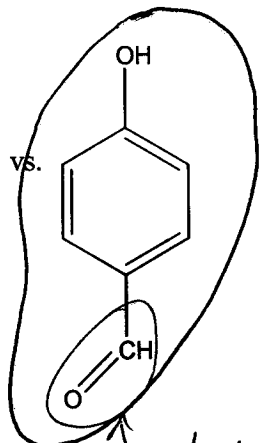
vs.



III.

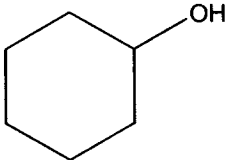


vs.

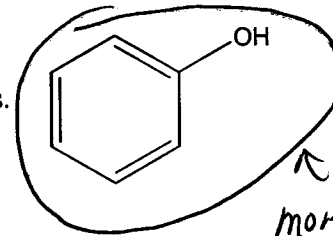


Electron withdrawing groups (meta-directors) increase the acidity of an alcohol.

II.

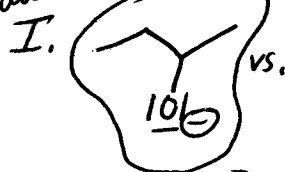


vs.



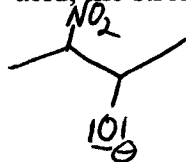
Phenols are more acidic than normal alcohols.

To get conj. base → remove H⁺ from original alcohol.

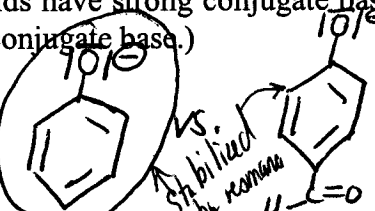


D.

For each alcohol or phenol given in question 2B above, give the conjugate base (alkoxide or phenoxide). For each pair, indicate which conjugate base is stronger. (Remember: Weak acids have strong conjugate bases. Therefore, the weaker the acid, the stronger the conjugate base.)



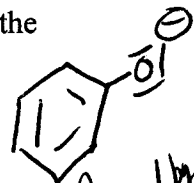
II.



III.



vs.



What reagent should be used to prepare each of the conjugate bases specified in question 2C?

Use K₂CO₃ or NaH for the normal alcohols. Use NaOH for the phenols.