

CHEM 293

Sample Laboratory Exam

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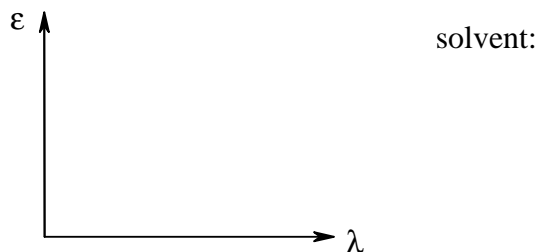
Name _____

In the multiple choice questions, circle the one correct answer.

Questions 1-15 are 2 points each.

The following is a cut-down version of an original exam. Given are representative questions. Covered will be UV/Vis, IR and ^1H NMR spectroscopies as well as instrumentation and general areas.

2. Draw the UV/Vis spectrum that is desirable for an ideal solvent in a UV/Vis experiment. Give an example of such a solvent.



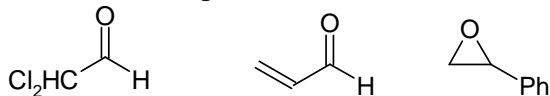
3. UV spectra of aromatic compounds are usually recorded for

- the neat liquid compound.
- the solid compound ground with solid KBr.
- a solution of the compound in benzene.
- a solution of the compound in hexane.

6. Which statement is correct?

- Frequency is $1/\lambda$, wavenumber is c/λ .
- Frequency is λ/c , wavenumber is $1/\lambda$.
- Frequency is c/λ , wavenumber is $1/\lambda$.
- Wavenumber and frequency are not related.

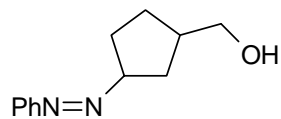
13. Circle the compound that shows an AMX coupling system in the ^1H NMR.



15. Intramolecular hydrogen bonds are

- concentration dependent.
- concentration independent.
- interactions of the hydrogen with the attached carbon.
- interactions of the hydrogen with itself.

17. (5 points) Describe in detail how you would use IR spectroscopy to determine whether there is a hydrogen bonding interaction between the substituents in the following compound.



Good luck.

