CHEM 393 Labexam Version A Concordia UNIVERSITY

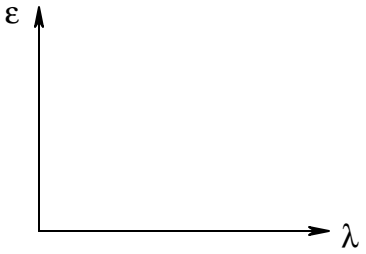
**Laboratory Exam. April 7, 2003**
**CHEM 393** **Name** _____
**Dr. H.M. Muchall**

***Make sure that your exam has 3 pages. In the multiple choice questions, circle the one correct answer. If you use pencil, your exam will not be remarked.***

***The questions 1-15 are 2 points each.***

## The following is a cut-down version of the original exam. Given are representative questions. Covered will be UV/Vis, IR and $^1$H 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.

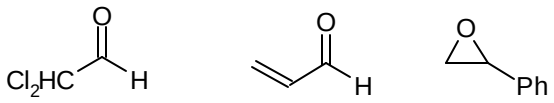



solvent:

3. UV spectra of aromatic compounds are usually recorded for
   a) the neat liquid compound.
   b) the solid compound ground with solid KBr.
   c) a solution of the compound in benzene.
   d) a solution of the compound in hexane.

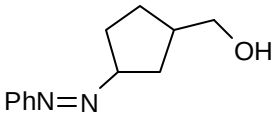
6. Which statement is correct?
   a) Frequency is 1/λ, wavenumber is c/λ.
   b) Frequency is λ/c, wavenumber is 1/λ.
   c) Frequency is c/λ, wavenumber is 1/λ.
   d) Wavenumber and frequency are not related.

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




15. Intramolecular hydrogen bonds are
   a) concentration dependent.
   b) concentration independent.
   c) interactions of the hydrogen with the attached carbon.
   d) 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.

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