Chm 222 Spring 2012
Section 1 Mr Linck
Practice Quiz

This quiz is open-book, open-notes. You must work on this quiz **ON YOUR OWN**, without discussion or help from fellow students, Christian Bale, Senator-elect Brown, Kate Queeney, other faculty, tutors, your dog Fido, or any other person, living or dead.

1.1. Give the Newman projection of *the most stable* conformer of 1-bromobutane looking down the C1-C2 bond.

1.2. Imagine 1-bromobutane rotating about the C1-C2 bond. At some angle, the molecule will exhibit maximum *instability*. Give the Newman projection for that angle.

2.1. Give the ihd of C_5H_9N.

2.2. Give a Lewis structure for *one isomer* of the molecule of problem 2.1.

2.3. Give a Lewis structure for *one isomer* of C_4H_6.

2.4. Give a Lewis structure for *one isomer* of $C_4H_2Cl_4O$ **that does NOT have** a C-C π bond.

3.1. Give a line (skeletal) structure for an alcohol.

3.2. Give a line (skeletal) structure for a ketone.

3.3. Give a line (skeletal) structure for 3-hexylamine.

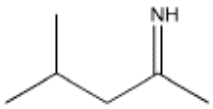
4. On a correct Lewis structure, indicate the carbon level (c.l.) for each carbon atom of 3,3,4-trifluoro-butanal.

5.1. Thiomethanal is methanal with the oxygen atom replaced by a sulfur atom. What hybridization would you use on the carbon atom of thiomethanal?

5.2. Sketch the highest occupied molecular orbital (HOMO) in thiomethanal.

5.3. Sketch the lowest unoccupied molecular orbital (LUMO) in thiomethanal.

6. Use epwa to show what might happen if hydride ion, H^-, is brought up to **1**, and the product of this reaction is then treated with dilute H^+.



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7. Each sub-heading gives the IR features of a compound. Indicate what you can say about the molecule. HINT: In all cases there are peaks between 2900-3000 and below 1500 cm^{-1}.

7.1. 3050, 2720, 1730, 1610 cm^{-1}.

7.2. broad, strong 3000-3400, weak 2230 cm^{-1}.

7.3. two broad peaks at 3300 and 3150, 1720 cm^{-1}.

7.4. See HINT plus 720 cm^{-1}.