Chemistry 220b, Section 1 Name _____

Quiz 1 (25 pts)

Thursday, January 27, 2011

Chapters 12, 15.1-15.6c

Write and sign the VU Honor Pledge:

_____

signature

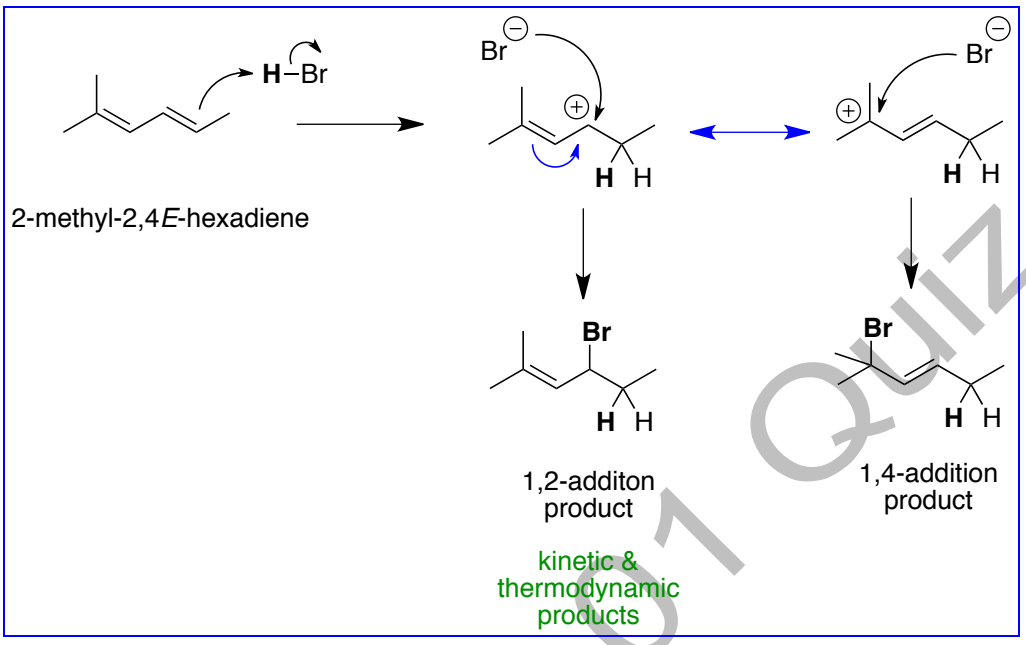
This Quiz is closed book and closed notes

NOTE: It is difficult for me to give you partial credit if you do not show your work!

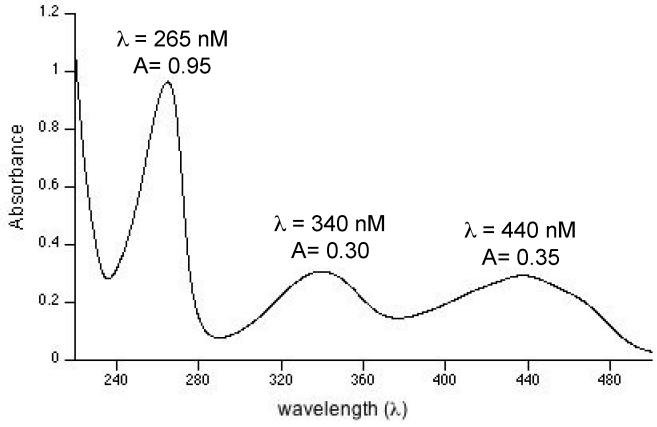
Neatness counts

Good Luck !!

1. Predict the major product for the reaction of H-Br and 2-methyl-2,4*E*-hexadiene under kinetic and thermodynamic control. Clearly draw a detailed mechanism for their formation. (8 pts)



2. The UV spectrum of an analyte is shown below. The analyte concentration was 3×10^{-5} M and the path length used to acquire the spectrum was 1 cm. Identify the λ_{max} absorbance and calculate its extinction coefficient (ε, molar absorptivity). (5 pts)

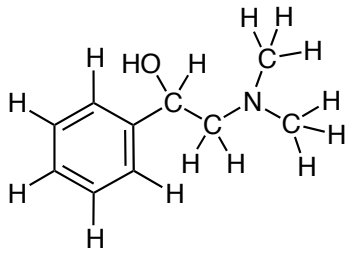


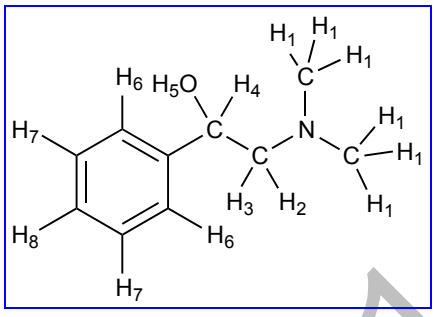
λ_{max} = 440 nm $A = c\, l\, \varepsilon$

$0.35 = (3 \times 10^{-5})\,(1)\,\varepsilon$

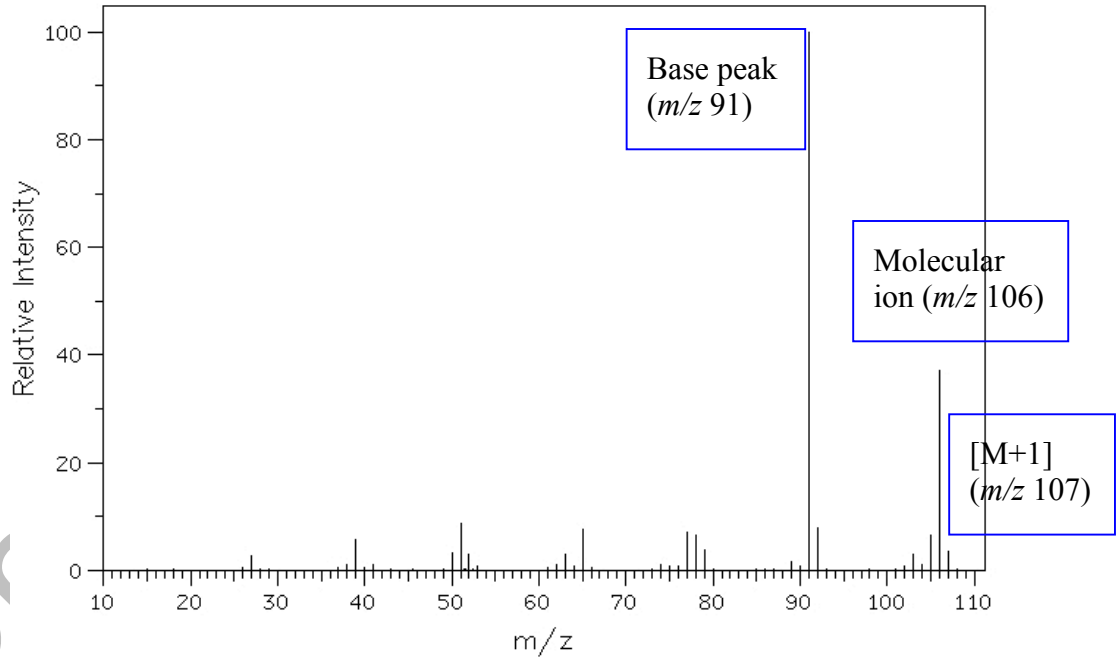
$$\varepsilon = \frac{0.35}{3 \times 10^{-5}} = 12{,}000$$

3. How many ^{1}H NMR resonances are predicted for the compound below? Identify all sets of equivalent ^{1}H nuclei. (8 pts)





4. The mass spectrum of ethylbenzene (MW = 106) is shown below. Identify the base peak, the molecular ion, and the [M+1] peak. (4 pts)



Problem 1:_____ (8 pts) 3:_____ (8 pts)

2:_____ (5 pts) 4:_____ (4 pts)

Total out of 25: _____