Chem 333 Fall 2012 Exam #3 November 19, 2012 Name_____

This is an open-notes, open-book exam. For #1, indicate which UV table should be used, and calculate the λ_{max} . For #2, calculate the percent of **A** that has been converted to **B**. For #3 and for #4, deduce the structure of the product.

1. (20 points)









4.

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2. (10 points)

On heating, **A** is converted into **B**. A sample of **B** showed an absorbance at 220 nm of 2.30, and an absorbance at 280 nm of 1.80 nm. A sample of **A** showed an absorbance at 220 nm of 1.85, and an absorbance at 280 nm of 0.65 nm. After an hour at 165° C, a sample that at the beginning had been pure **A** showed an absorbance at 220 nm of 1.70, and an absorbance at 280 nm of 1.00. What percent of **A** had been converted to **B**?



3. (30 points) Deduce the structure of \mathbf{C} .

$C C_{10}H_{11}NO$

¹ H NMR:	¹³ C NMR:
7.6, , bs, 1H (exchanges)	169.0, s
6-7-7.3, m, 5H	137.4, s
6.02, ddt, J = 15.5, 11.2, 7.2 Hz, 1H	131.1, d
5.35, d, J = 15.5 Hz, 1H	129.0, d (2)
5.22, d, J = 11.2 Hz, 1H	124.4, d
3.22, d, J = 7.2 Hz, 2H	120.5, t
	119.9, d (2)
	42.7, t

4. (40 points) Deduce the structure of **D**.

 $\mathbf{D} \qquad C_{10}H_{10}O_3 \qquad \text{IR: 2916, 1247, 1025, 776, 600 cm}^{-1}$

¹ H NMR:	¹³ C NMR:
2.67 dd, 1H, J = 8.2, 3.9 Hz	14.4, t
2.79 dd, 1H, J = 8.2,1.1 Hz	46.7, t
2.99 d, 2H, $J = 6.6$ Hz	51.9, d
3.56 m, 1H	96.1, t
5.87 s, 2H	114.1, d
6.56–6.6 m, 3H	118.3, d
	124.2, d
	131.9,s
	147.1, s
	149.2, s