

Homework 10 Questions

CHEM 2311 Fall 2003 Name: _____ Section: _____ Roll# _____
Due on November 24, 2003

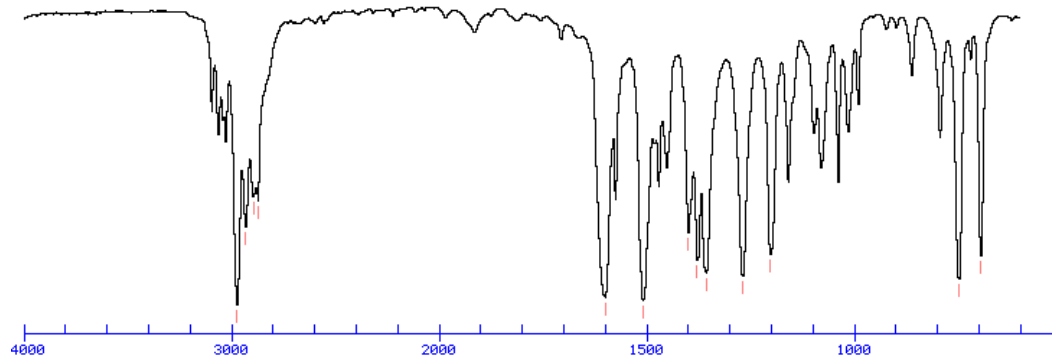
You MUST answer on the form provided or NO CREDIT will be given!

1. What is the structure of the compound, $C_{10}H_{15}N$, which gives the following NMR and IR data? (5 points)

1H : 1.41 ppm (triplet, 6H), 3.59 ppm (quartet, 4H), 6.93 ppm (multiplet, 3H), 7.48 ppm (multiplet, 2H)

^{13}C : 12.9 ppm, 44.6 ppm, 112 ppm, 116 ppm, 130 ppm, 148 ppm

IR:



2. There are three isomers of dimethylbenzene. Determine which isomer corresponds to each 1H NMR spectrum. (6 points)

Isomer X: 1H NMR: 2.46 ppm (6H, singlet), 7.13 ppm (3H, multiplet), 7.29 ppm (1H, multiplet)

Isomer Y: 1H NMR: 2.40 ppm (6H, singlet), 7.25 ppm (multiplet, 4H)

Isomer Z: 1H NMR: 2.48 ppm (6H, singlet), 7.24 ppm (singlet, 4H)

3. What is the structure of the compound, $C_8H_{12}O_2$, which gives the following NMR data? (5 points)

1H NMR: 0.86 ppm (triplet, 3H), 1.38 ppm (sextet, 2H), 1.50 (pentet, 2H), 2.28 ppm (triplet, 2H), 3.70 ppm (singlet, 3H).

^{13}C NMR: 13.4 ppm, 18.2 ppm, 21.8 ppm, 29.5 ppm, 52.4 ppm, 72.8 ppm, 89.8 ppm, 154 ppm.

4. What is the structure of the compound, $C_8H_{10}O$, which gives the following NMR data? (4 points)

1H NMR: 2.35 ppm (singlet, 1H), 2.87 ppm (triplet, 2H), 3.83 ppm (triplet, 2H), 7.3 ppm (multiplet, 5H).

^{13}C NMR: 39.2 ppm, 63.6 ppm, 126 ppm, 128 ppm, 129 ppm, 138 ppm.