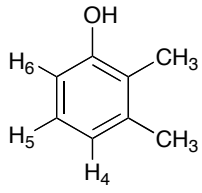
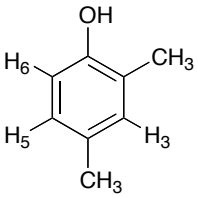
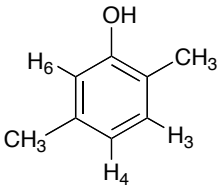
3. 300 MHz ^{1}H NMR spectra in $CDCl_3$ are shown below for five of the six isomers of dimethylphenol. Match each spectrum to the appropriate compound and assign the resonances of the spectrum to the appropriate protons in the compound. (15 points)



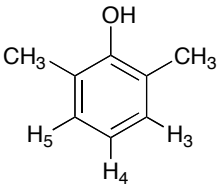
2,3-methylphenol



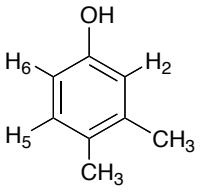
2,4-methylphenol



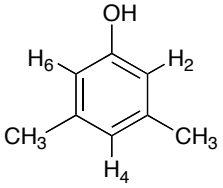
2,5-dimethylphenol



2,6-dimethylphenol

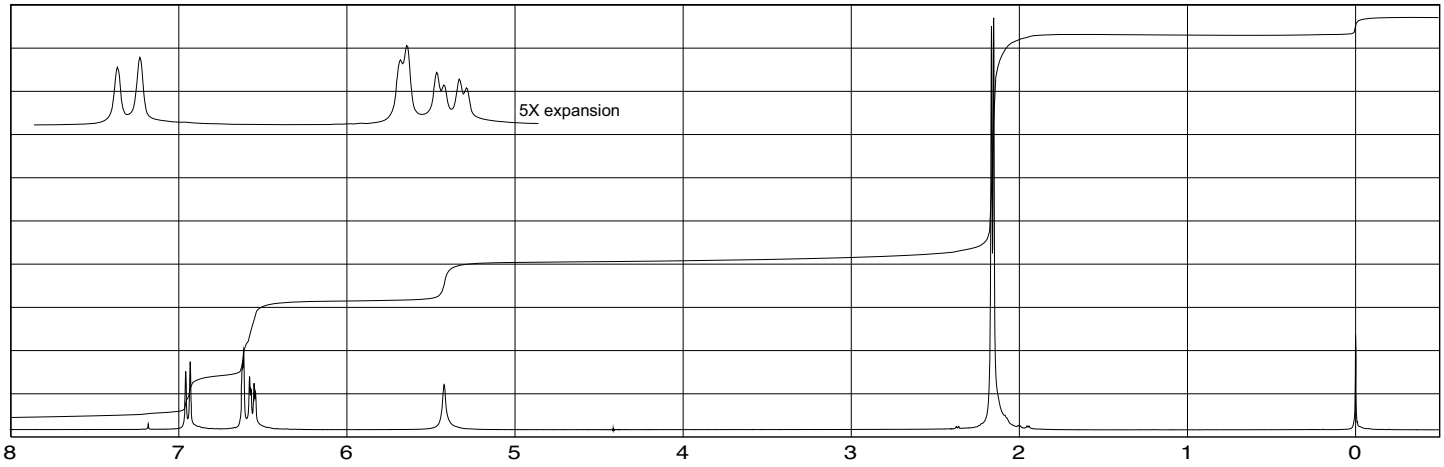


3,4-dimethylphenol

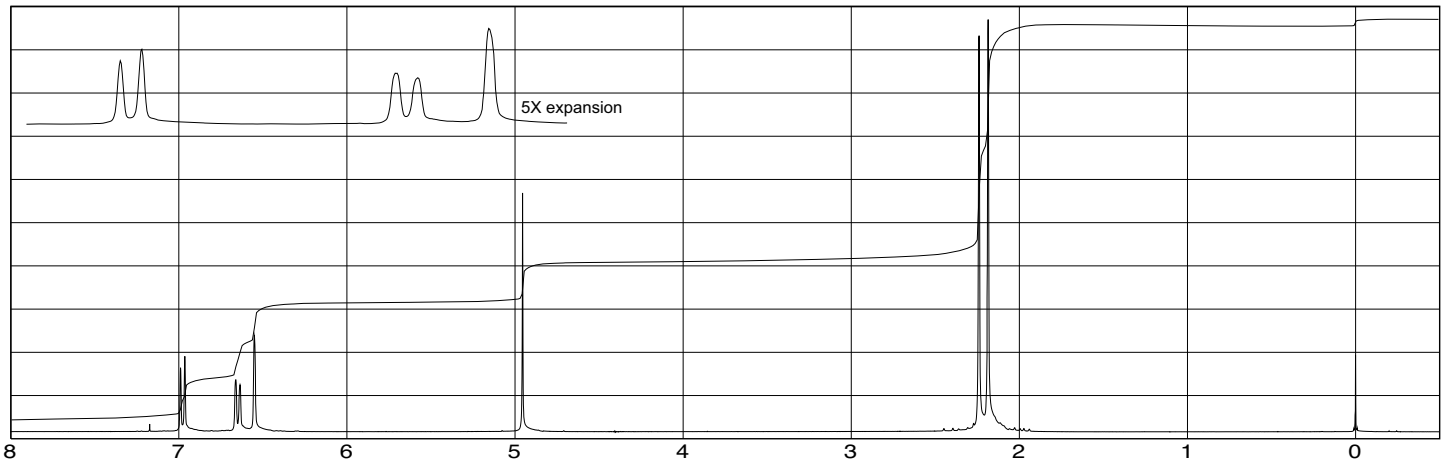


3,5-dimethylphenol

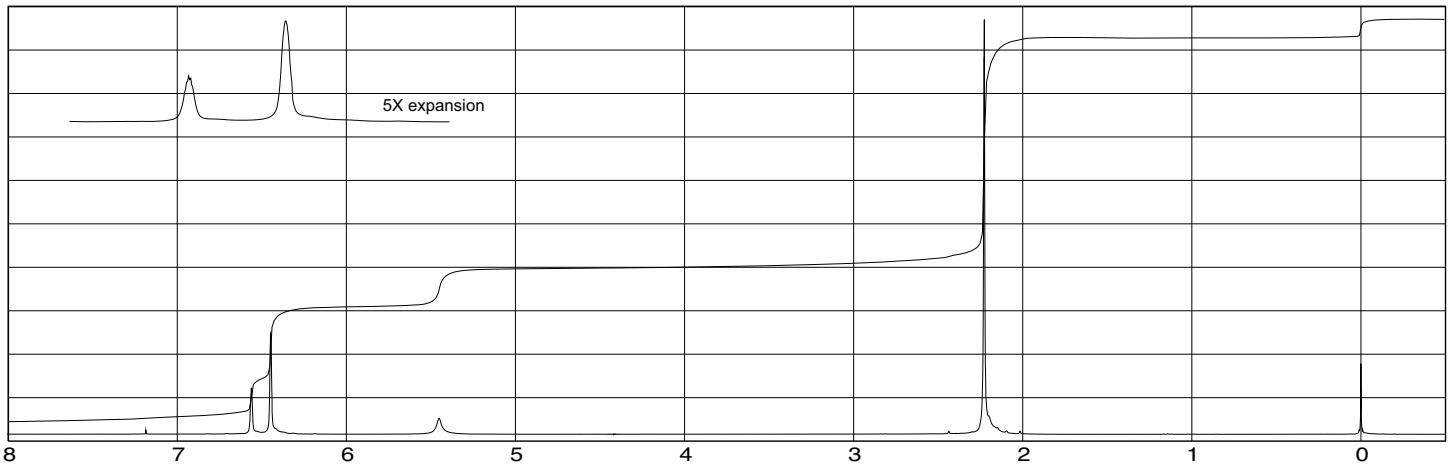
SPECTRUM A. **Identify the compound** (here) _____ and **label the peaks** (below) with the corresponding proton (with labels selected among H_2, H_3, H_4, H_5, and H_6 as appropriate).



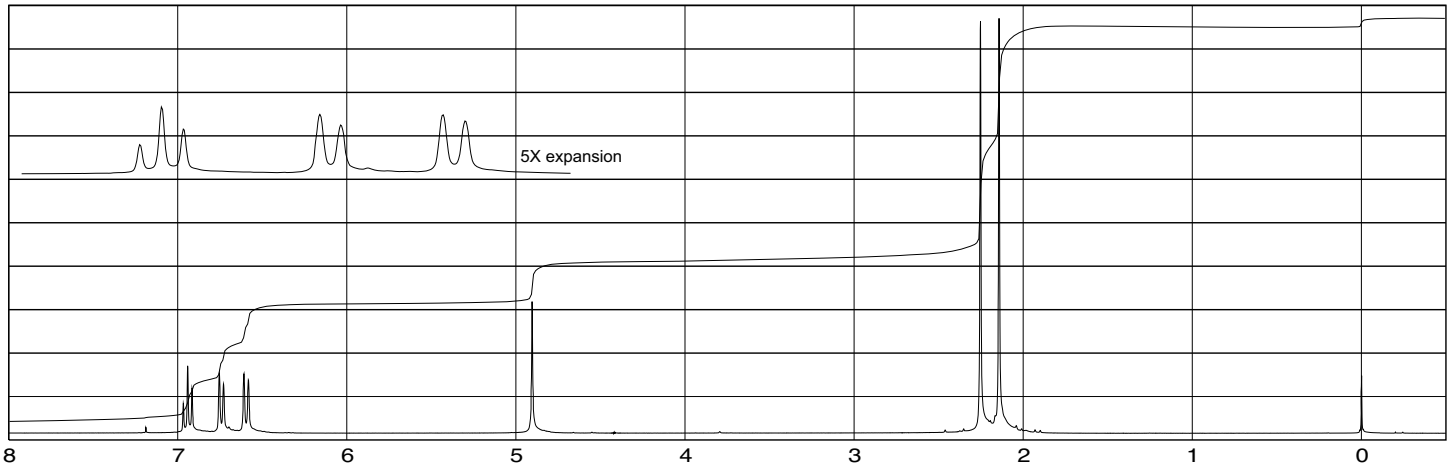
SPECTRUM B. **Identify the compound** (here) _____ and **label the peaks** (below) with the corresponding proton (with labels selected among H_2, H_3, H_4, H_5, and H_6 as appropriate).



SPECTRUM C. **Identify the compound** (here) _____ and **label the peaks** (below) with the corresponding proton (with labels selected among H_2, H_3, H_4, H_5, and H_6 as appropriate).



SPECTRUM D. **Identify the compound** (here) _____ and **label the peaks** (below) with the corresponding proton (with labels selected among H_2, H_3, H_4, H_5, and H_6 as appropriate).



SPECTRUM E. **Identify the compound** (here) _____ and **label the peaks** (below) with the corresponding proton (with labels selected among H_2, H_3, H_4, H_5, and H_6 as appropriate).