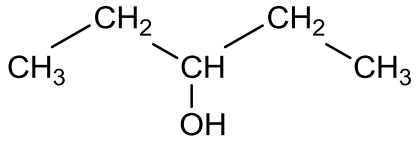
^{13}C NMR Questions

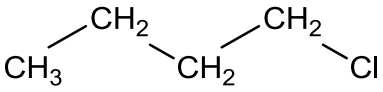
QUESTION ONE

Work out how many ^{13}C peaks you would expect to find in the NMR spectra for the following molecules:

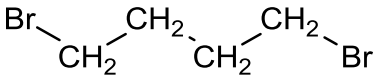
a)



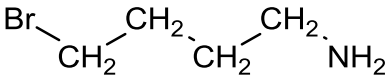
b)



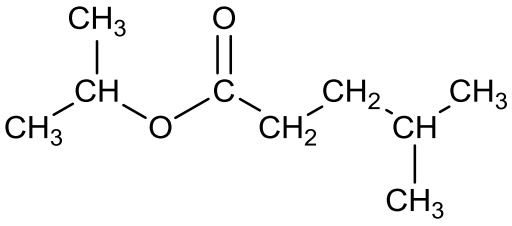
c)



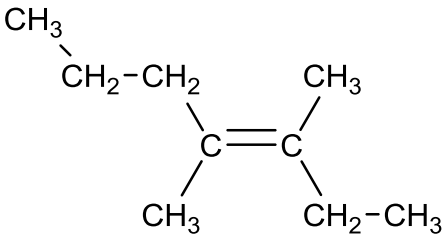
d)



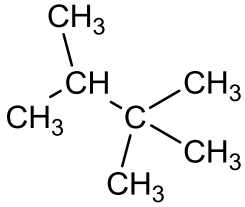
e)



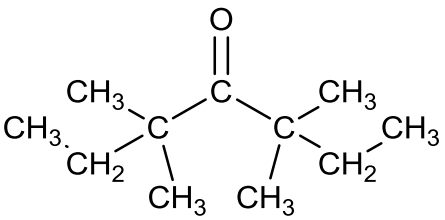
f)



g)



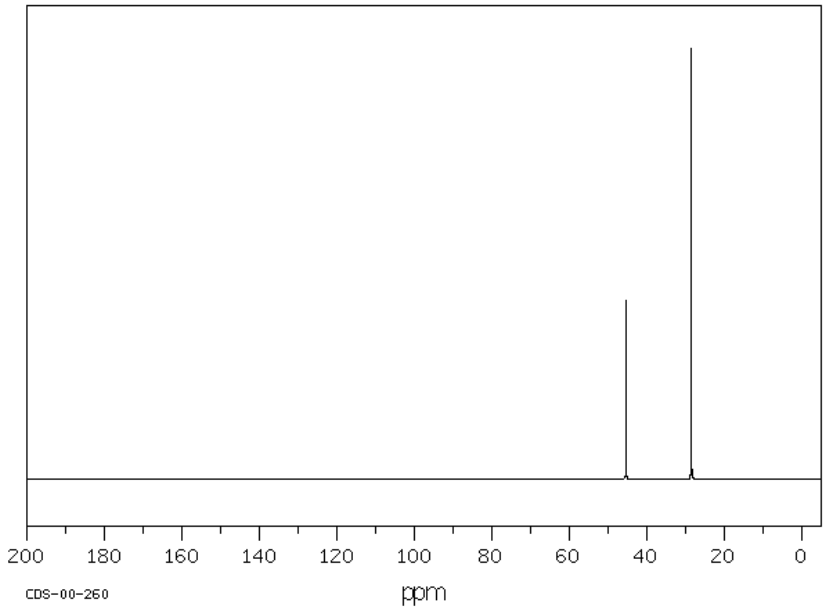
h)



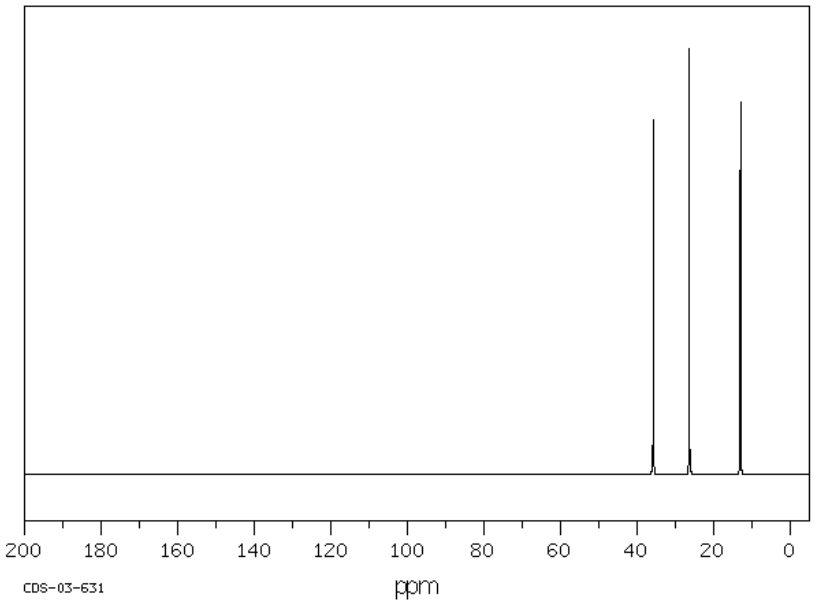
QUESTION TWO

Each of the following ^{13}C NMR spectra represents one of the possible isomers of each of the corresponding molecular formulae. For each question draw the chemical structure of the correct isomer.

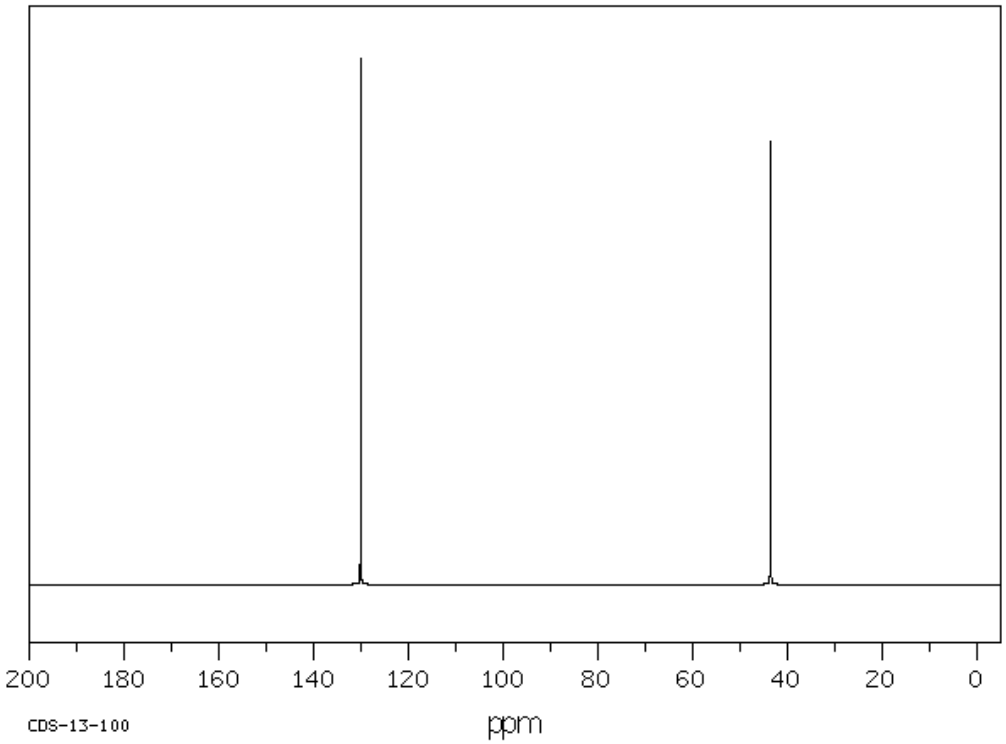
a) C_3H_7Br



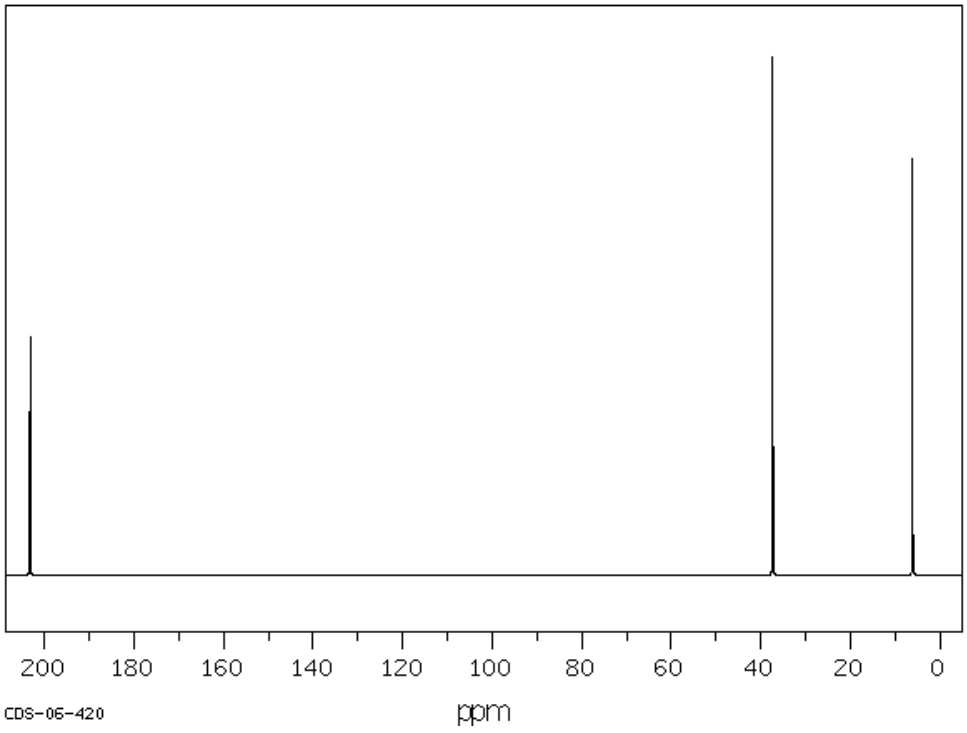
b) C_3H_7Br



c) $C_4H_6Cl_2$ (contains a C=C double bond)



d) C_3H_6O (contains a C=O bond)



QUESTION THREE

There are four possible structures for an alcohol with the molecular formula $C_4H_{10}O$. Draw the structural formulae for all four alcohols and determine which one belongs to the following ^{13}C NMR spectra