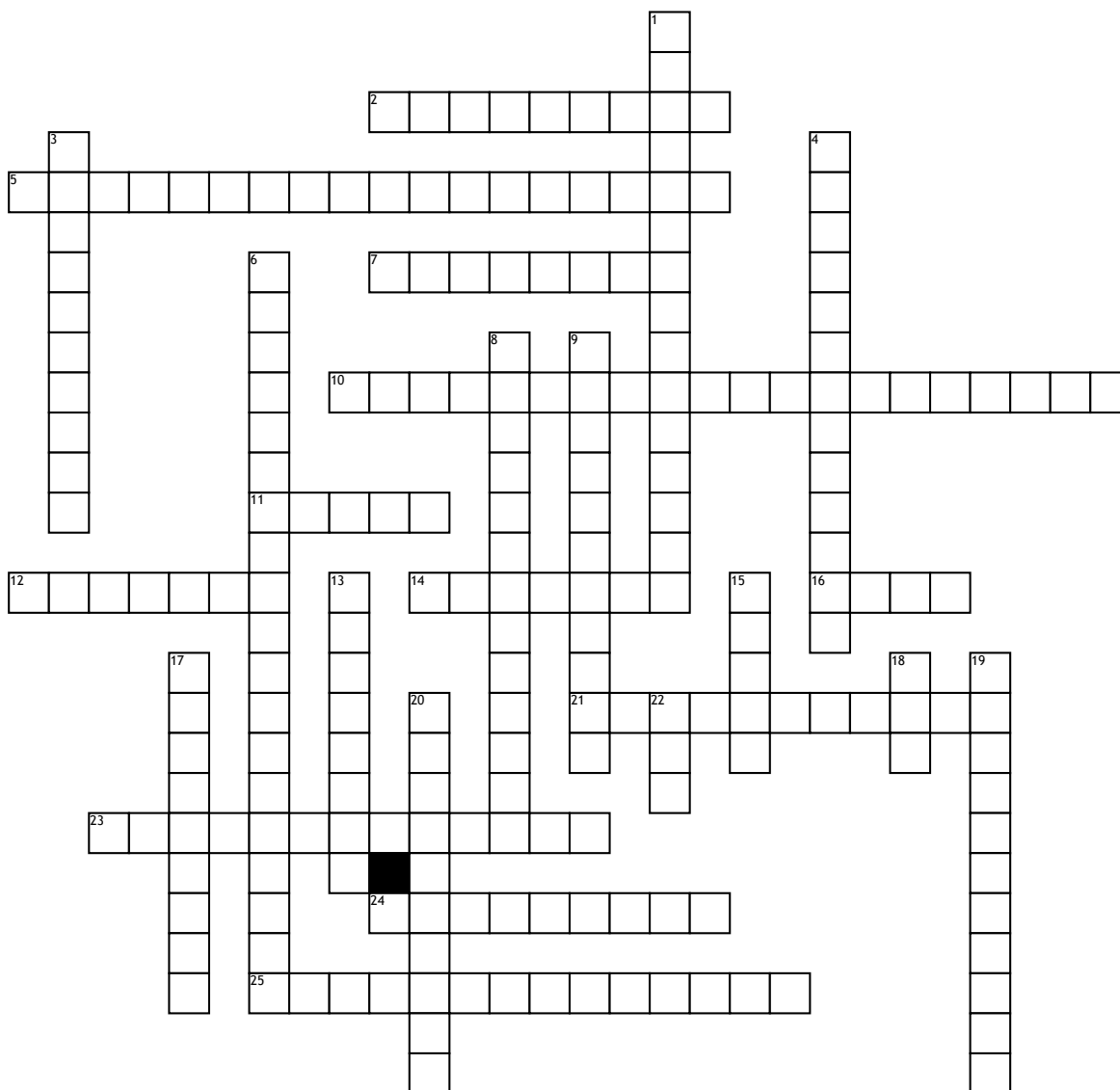


NMR



Across

2. Two hydrogens will not couple to one another when they are
5. As the net field is different for every H in a slightly different chemical environment, the _____ / _____ will also be different.
7. What spectra is seen with ^{13}C broad band decoupling?
10. The two common types of NMR are: _____ / _____ and _____ / _____.
11. When the sample goes into the NMR scan it is affected by the magnetic field of the machine. What are the hydrogens called that are aligned with the applied magnetic field and are lower in energy?
12. What does fewer hydrogen bonds in alcohols and amines cause the chemical shift values to move?
14. One adjacent proton splits an NMR signal into a doublet, what do two adjacent protons split the NMR signal into?

16. How many ^{13}C signals are there in heptane?
21. What is the requirement for the NMR phenomenon?
23. The strength of B_0 determines the energy difference between the _____ / _____ / _____.
24. What does the ν stand for in the equation $\nu = c/\lambda$?
25. NMR uses higher _____ / _____ than Infrared.
- Down**
1. What does the h stand for in the equation $E = h\nu = (hc)/\lambda$?
3. What hydrogens require B_0 to be reduced due to the magnetic shield being induced by the electrons?
4. What is the term used for different signal positions?
6. What do we use to eliminate ^{13}C - ^1H coupling in ^{13}C NMR?

8. Splitting only occurs between ----- protons.
9. What is the term given to a nucleus whose chemical shift has been increased due to removal of electron density or magnetic induction?
13. If a compound has non identical hydrogens what can it undergo?
15. NMR is a _____ energy spectroscopy.
17. here are two types of NMR: hydrogen NMR. What is the next type of NMR?
18. What are the units used in NMR to describe the chemical shift of hydrogen atoms?
19. What is the name of the process in NMR that tells us the number of protons represented by a given signal?
20. When using the DEPT technique what carbons can be identified from comparing spectra from CH , CH_2 , CH_3 groups and all the carbon peaks?
22. What is the name of a powerful spectroscopic technique?