PROGRAMME NAME: M.Sc. (CHEMISTRY)
YEAR: II
SEMESTER: III
COURSE NAME: APPLICATION OF SPECTROSCOPY

1. **What is P, Q, R branches ?**
2. **Explain mutual exclusion principle.**
3. **An organic compounds having molecular formula $C_8H_{10}O$ exhibited the following ^1H NMR data δ 2.5 (3H, s), 3.8 (3H, s), 6.8 (2H, d, J 8Hz) ppm. Write the structure of the compound.**
4. **Calculate the ESR frequency in a magnetic field of 25000 Gaus (β = 9.27 4× 10^{-24} J/T).**
5. **Write the principle of Mossbauer spectra.**
6. **Explain rigid rotator model.**
7. **Write details about vibrational –rotational Raman spectra.**
8. **Explain Nuclear Overhauser Effect and ^{13}C NMR spectra.**
9. **Write the theories and application of ESR spectra.**
10. **Write the theories and instrumentation of NQR spectra.**
11. **What is Raman Spectroscopy? Write theories and application of Raman spectroscopy**
12. **What is spin-spin interaction? Write details about different types of coupling and also write factors influencing coupling constant.**