

COURSE CODE - 6030201

M.PHIL DEGREE EXAMINATION - JAN 2009

M.PHIL (CHEMISTRY)

PHYSICAL METHODS IN CHEMISTRY

(For candidates admitted from the calendar year 2007 onwards)

Time: 3 Hours

Max Marks: 100

Section - A

Answer all the Questions:

10 X 3 = 30

1. What is coupling constant?
2. Write the selection rules for electronic spectroscopy?
3. What is spin-spin splitting?
4. Derive the term symbol for carbon in ground state?
5. Name any three shift reagents?
6. What is Kramer's degeneracy?
7. Write the principle of photo electron spectroscopy?
8. Define isomeric shift?
9. What is chemical shift?
10. Write the Karplus equation?

Section - B

Answer any Five Questions:

5 X 6 = 30

11. Explain the charge transfer spectra with example?
12. Write the sample handling techniques in Infra-red spectroscopy?
13. Explain the hyperfine splitting with one example?
14. Write the importance of Meta stable peaks in mass spectroscopy?
15. Explain the effect of spin-orbit coupling with example?
16. Explain the types of spectra?
17. Explain the application of Moss Baner spectroscopy to iron compounds?
18. Write about optical rotators dispersion?

Section - C

Answer any Two Questions:

2 X 20 = 40

19. Explain the combined uses of IR and Raman spectroscopy in the structural elucidation of simple molecules?
20. Explain the instrumentation of NMR spectroscopy
21. Write the principle of Moss Baner spectroscopy and explain the instrumentation in detail?