

**M.Sc. DEGREE EXAMINATION
FOURTH SEMESTER
22CH4T1 :: ADVANCED ORGANIC SPECTROSCOPY**

Time: 3 hours

Maximum Marks: 70

SECTION – A

Answer all the questions

5X4=20M

- 1) (a). Explain the importance of Double irradiation. (CO-2,L-2)
(OR)
(b). Write a short note on nomenclature of spin systems. (CO-2,L-2)
- 2) (a). Explain the α , β & γ effects in ^{13}C NMR with suitable examples. (CO-3,L-3)
(OR)
(b). Discuss the importance of off resonance decoupling CMR spectrum. (CO-3,L-3)
- 3) (a). What is the sign of 3 methyl cyclohexanone Cotton effect? (CO-3,L-3)
(OR)
(b). Predict the sign of cotton effect in 3-methyl cyclohexanone when substituent is in equatorial position. (CO-3,L-3)
- 4)(a). What information is possible from the COSY experiment? (CO-2,L-2)
(OR)
(b). Discuss various periods involved in 2D NMR. (CO-2,L-2)
- 5) (a) Discuss briefly the IR signals for the compound $\text{C}_6\text{H}_5 - \text{CH}_2 - \text{O} - \text{CO} - \text{CH}_3$. (CO-3,L-3)
(OR)
(b) Predict the possible number of ^1H NMR signals for the compound $\text{CH}_3 - (\text{CO}) - \text{CH}_2 - \text{CH}_3$. (CO-3,L-3).

SECTION – B

(5x10=50M)

UNIT - I

- 6) (a) Explain the effect of solvent on PMR spectrum with suitable examples. (CO-4,L-4)
(OR)
(b) Differentiate between first order and non first order PMR spectrums with examples. (CO-4,L-4)

UNIT – II

- 7) (a) Discuss the importance of BBD & SFORD techniques in ^{13}C NMR spectroscopy with examples. (CO-3,L-3)
(OR)
(b) A compound of MF C_4H_{10} in its CMR Spectrum show 17.1(q) 67.4(T). Determine the structure of compound by using CMR data. (CO-3,L-3)

UNIT – III

- 8) (a) Explain the following i) Axial halo ketone rule ii) Types of optical rotatory dispersion curves. (CO-3,L-3)
(OR)
(b) Explain the applications of Octant rule. (CO-3,L-3)

UNIT – IV