

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE **22PCY312**

DURING THE ACADEMIC YEAR 2022 ONLY)

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MONTH AND YEAR

M.Sc., CHEMISTRY

MAXIMUM MARKS: 50

SEMESTER:III

TIME : 3 HOURS

PART - III

22PCY312- ORGANIC SPECTROSCOPY

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(Objective Questions with four Multiple Choices)

(K1)

1. Batho chromic shift is otherwise known as
(a) Blue shift (b) Doppler shift (c) Red shift (d) Green shift
2. Which one of the following is used to calculate the vibrational degrees of freedom for linear molecule?
(a) $3n - 5$ (b) $3n - 6$ (c) $3n$ (d) $3n + 5$
3. The largest peak in the mass spectrum is known as_____
(a) base peak (b) molecular ion peak
(c) isotopic peak (d) metastable peak
4. In a triplet the relative peak areas are in the ratio
(a) 1:1:1
(b) 1:2:1
(c) 1:3:1
(d) 1:4:1
5. Which of the nuclei is NMR active?
(a) ^{13}C (b) ^{12}C (c) ^{14}C (d) ^{14}N

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. What is the name of the source used to produce UV light?
7. What is the range of finger print region of the infrared spectrum?
8. Write the nitrogen rule?
9. Name the solvent most often used for ^1H NMR.
10. What is cause Nuclear overhauser Enhancement?

SECTION – B

(5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Write the selection rules for UV-Vis spectrum.
(OR)
b) Explain the applications of UV-vis spectroscopy to organic compounds.
12. a) Describe the importance of finger print region With Example.
(OR)
b) Write the differences between Raman spectra and IR spectra.

13. a) Sketch and explain Fragmentation pattern associated with benzyl alcohol.
(OR)
b) Figure out the mechanism of McLafferty rearrangement with suitable example.
14. a) Describe chemical shift and its measurement.
(OR)
b) Explain the solvents used in NMR spectra.
15. a) Assess and Explain Off-resonance decoupling effect.
(OR)
b) Explain NOE and its importance.

SECTION – C (5 X 5 = 25 MARKS)
ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.
(K4 (Or) K5)

16. a) Explain the Double beam instrumentation of UV Vis spectroscopy.
(OR)
b) Evaluate the Woodward - Fischer rules – for carbonyl compounds with two examples.
17. a) Determine and explain the factors influencing vibrational frequencies.
(OR)
b) Explain the characteristic the applications of IR spectroscopy.
18. a) Discuss LC-MS principles and its applications.
(OR)
b) Illustrate the ionisation techniques in mass spectroscopy.
19. a) Determine the factors influencing chemical shift.
(OR)
b) Discuss Spin spin coupling and chemical shift reagents. (5+5)
20. a) Outline the importance of broad band decoupling and DEPT spectrum.
(OR)
b) Explain ^1H - ^{13}C COSY Technique.

22PCY312/-

ETHICAL PAPER