

D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1**SEMESTER EXAMINATIONS****APRIL – 2018****15CCH6D****ELECTIVE IV: SPECTROSCOPY****Time : 3 Hrs****Max. Marks : 75****SECTION-A (10 x 2 = 20)****Answer ALL the questions.**

1. What is meant by electromagnetic radiation?
2. State and explain Beer – Lambertz law.
3. State and explain Hooke's law.
4. Distinguish between Stokes and anti – Stokes lines.
5. What are the factors that influencing fragmentation?
6. State and explain ring rule.
7. Define chemical shift.
8. Interpret the NMR Spectra of Toluene.
9. What is meant by Median and standard deviation?
10. Write the basic principle of ESR Spectroscopy.

SECTION-B (5 x 5 = 25)**Answer any FIVE of the following questions.**

11. Write the basic concepts of absorption and emission spectroscopy.
12. Distinguish between Raman and IR spectroscopy.
13. Write the basic principle and instrumentation of Mass spectroscopy.
14. Write a detailed note on (i) Spin – Spin coupling and (ii) Shielding mechanism.
15. Discuss the applications of computers in chemistry.
16. What is meant by coupling constant (J)? Interpret the NMR Spectrum of Ethanol, acetaldehyde and 1,1,2 – tribromo ethane.
17. (i) State and explain mutual exclusion principle. (2)
(ii) What are the applications of Raman Spectroscopy? (3)
18. (i) What are chromophores and Auxochromes? (2)
(ii) Explain the various types of electronic transitions. (3)

SECTION-C (3 x 10 = 30)

Answer ALL the questions.

19. (a) Give a brief account of photocalorimeter and spectrophotometer.

(Or)

(b) (i) Explain the source and sampling techniques involved in IR spectroscopy. (7)

(ii) Give the differences between Raman and Rayleigh Scattering. (3)

20. (a) (i) What is meant by base peak, isotopic peak and metastable peak in Mass spectroscopy. (7)

(ii) Define Nitrogen rule. (3)

(Or)

(b) Describe the principle and instrumentation of NMR Spectroscopy.

21. (a) Discuss the principle, instrumentation and applications of ESR Spectroscopy.

(Or)

(b) What are computers? How is it classified? Draw and explain the block diagram of a digital computer.

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