C. ABDUL HAKEEM COLLEGE (AUTONOMOUS),
MELVISHARAM - 632 509.
SEMESTER EXAMINATIONS, NOVEMBER - 2018

B.Sc., CHEMISTRY **SEMESTER V**

U15ECH501 – SPECTROSCOPY - I (ELECTIVE - I)

Time: Three Hours Maximum: 75 Marks

SECTION - A (10 X 2 = 20 Marks)

Answer **ALL** Questions.

1. How does the intensity of the successive spectral lines in pure rotational spectra vary?
2. Define Spectrum.
3. State –Beer Lambert's Law.
4. What are the applications of Uv-Visible spectroscopy?
5. Can you distinguish a pair of enantiomers by IR- Spectroscopy?
6. Which of the following diatomic molecules do not absorbs in the IR-region. Hcl , Cl, Br , N_2, H_2, O_2.
7. Why some of the fundamental vibrations are IR active while other are not?
8. What is the range of IR- Radiations?
9. Write two advantages of Raman spectroscopy over IR –Spectroscopy.
10. What is the cause of Raman Effect?

SECTION - B (5 X 5 = 25 Marks)

Answer **ALL** Questions.

11. a) Discuss the different regions of electromagnetic radiation.

(Or)

b) Write about the limitation of microwave spectroscopy.

12. a) Write a note on Chromophore.

(Or)

b) Tabulate the comparison between photo colorimeter with Spectrophotometer.

13. a) What are the factors influencing vibrational frequencies.

(Or)

b) Discuss about IR activity of diatomic linear molecule.

14. a) Discuss about the applications of IR-Spectroscopy.

(Or)

b) Write a note on IR-sampling techniques.

15. a) Briefly explain Raman Scattering.

(Or)

b) Differences between Infra red and Raman Spectroscopy.

SECTION - C (3 X10 = 30 Marks)

Answer **ANY THREE** Questions.

16. Explain the fundamental principles involved in rotational spectroscopy and show how molecular Parameters can be obtained from rotational spectroscopy.
17. Draw the block diagram of a photo colorimeter instrument and explain.

18. Describe the instrumentation of IR – spectroscopy.
19. Explain:
    a) Hydrogen bonding in IR
    b) Identification of Ketone and ester using IR.
20. Explain in brief the rule of mutual exclusion.

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