

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.

B.Sc. END SEMESTER EXAMINATIONS APRIL-2022

SEMESTER - VI

08UPHCT6013 & UPH/CT/6013 - Spectroscopy and Laser Physics

Total Duration : 3 Hrs.

Total Marks : 60

Section A

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. What do the width and intensity of spectral lines represent?
2. Discuss in brief the rotation spectrum of carbon monoxide.
3. Explain the quantum theory of Raman effect.
4. Discuss the applications of LASER in communication and medicine.
5. How are holograms classified?
6. Brief on the interaction of rotation and vibration leading to infrared spectrum.
7. What is molecular polarizability? Mention its importance in Raman spectrum.
8. Discuss about the threshold condition for LASER action.

Section B

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Explain the basics of UV spectrum and also discuss the instrumentation techniques of UV Spectrophotometer.
10. With the suitable example, explain the diatomic vibration rotator.
11. (i) Explain the vibrational Raman spectrum.
(ii) How is it used for structure determination done from Raman and Infrared spectroscopy?
12. Describe the spontaneous emission and stimulated emission with Einstein's coefficients.
13. Explain the recording and reconstruction of hologram.
