

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.Physics - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - IV

22UPHCT4007 - Atomic Physics

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

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

1. Explain about Vector atom model in brief.
2. Define Thomson's Parabola Method and also interpret the action of electric and magnetic fields.
3. Discuss Production and properties of X-rays and also explain Bragg's law.
4. Sketch different types of laser activities like absorption and spontaneous, stimulated emission.
5. Describe the Experimental arrangement of normal Zeeman Effect.
6. Explain about the determination of the value of e/m .
7. Derive Mosley's law and its importance.
8. Discuss on Population inversion and meta stable state with neat diagram.

Section C

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

9. Explain about Stern-Gerlach experiment and also its working principle and procedure in detail.
10. Predict Lorentz classical theory of normal Zeeman effect with required diagram and also define stark effect.
11. Infer on Bainbridge's mass spectrograph with necessary diagram in detail.
12. Describe Compton effect and the derivation for change in wavelength and its experimental verification.
13. Deduce the applications of Lasers in communication and medicine.
