

Roll.No.

20UCHAT4004

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 - NOVEMBER 2025

SEMESTER - IV

20UCHAT4004 - Allied Physics - II

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

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

1. Discuss the combination of two prisms to produce dispersion without deviation.
2. Explain the L-S and j-j coupling schemes.
3. Describe the concepts of mass defect and binding energy.
4. Explain adiabatic demagnetization which produces low temperature.
5. Why is NAND gate called universal building block? Design NOT, OR, AND gates using NAND gates.
6. Explain the interaction of magnetic dipole moments due to orbital and spin motions of electrons.
7. Explain the liquid drop model of nucleus.
8. Explain theory and applications of porous plug experiment.

Section C

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

9. Obtain the expression for fringe width used to determine the thickness of a wire using air-wedge.
10. Explain the vector atom model with the discussion on the various associated quantum numbers.
11. Derive the exponential law of radio activity and obtain the expression for Half-life period and mean life period.
12. With a neat diagram discuss liquefaction of air by Linde's method.
13. State DeMorgan's theorems and verify with tables and expressions.
