

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. Maths - END SEMESTER EXAMINATIONS APRIL - 2024

SEMESTER - II

20UMAAT2D02 - Allied Physics - II

Total Duration : 2 Hrs. 30 Mins.

Total Marks : 60

Section B

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

1. Describe an experiment to determine the diameter of thin wire by forming air wedge.
2. Discuss the various quantum numbers associated to an electron in an atom based on the vector atom model.
3. What is mean life of a radioactive element and derive an expression for it.
4. Explain the operation of EX-OR gate with necessary truth table.
5. State and Prove De-Morgan's theorems.
6. Explain the terms: Binding energy, mass defect, Radioactivity, Nuclear fission and fusion.
7. Describe Sommerfeld's relativistic atom model.
8. What is Boolean Algebra? Explain the Boolean expressions for OR, AND and NOT circuits.

Section C

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

9. Obtain the expression for the combination of prisms to produce deviation without dispersion and dispersion without deviation.
10. State Pauli's exclusion principle and explain the j-j and L-S coupling schemes.
11. Derive Weizsacker semi-empirical mass formula.
12. Draw logic symbols and truth tables of AND, OR and explain the operation of it using diodes and NOT gates using transistor.
13. Why NAND gate is called universal building block? Explain with example.
