VA—47—2024

FACULTY OF SCIENCE

B.Sc. (Second Year) (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Pattern)

PHYSICS

Paper–VII

(Statistical Physics, Electromagnetic and Theory of Relativity)

(Saturday, 7-12-2024)   **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 Hours   *Maximum Marks—40*

N.B. :— (*i*) Attempt *all* questions.

(*ii*) Log table is allowed.

(*iii*) Non-programmable calculator is allowed.

(*iv*) Figures to the right hand side indicate full marks.

1. Derive an expression for Maxwell-Boltzmann distribution law.   15

Or

(*a*) Explain entropy and thermodynamic probability relation.   8

(*b*) Explain briefly the terms micro and macro states.   7

2. State the postulates of special theory of relativity. Derive on expression for mass-energy relation.   15

P.T.O.

Or

(*a*) Explain the generalization of Ampere's law and displacement current.

8

(*b*) Explain electromagnetic wave equation in terms of H. 7

3. Attempt any *two* of the following : 10

(*a*) Derive the expression for Galilean transformation.

(*b*) Write a note on electromagnetic energy.

(*c*) Write a note on thermodynamic probability.

(*d*) Describe the application of quantum statistics to photon gas.