SB—80—2022

FACULTY OF SCIENCE

B.Sc. (Third Semester) EXAMINATION

MAY/JUNE, 2022

(New Course)

PHYSICS

Paper-VII

(Statistical Physics, Electromagnetics and Theory of Relativity)

(Tuesday, 14-06-2022)   **Time : 2.00 p.m. to 4.30 p.m.**

Time— 2.30 Hours   *Maximum Marks—40*

N.B. :— (i) Attempt *All* questions.

     (ii) Illustrate your answer with suitably labelled diagram, wherever necessary.

1. Derive Fermi-Dirac distribution formula.   15

Or

(a) Show that the entropy of the system is proportional to the logarithm of probability of the system.   8

(b) Define and explain the microstate with the help of an example.   7

2. Derive the general formula of pounting theorem.   15

Or

(a) Obtain Einstein's mass-energy equivalence relation.   8

(b) Derive the formula for addition of velocities and show that it is in conformity with principle of constancy of speed of light.   7

3. Attempt any *two* questions (each of *five* marks) : 2×5=10

(*i*) Write a short note on permutation and combination.

(*ii*) Write a short note on electron gas.

(*iii*) State and explain Ampere's raw of electromagnetic induction.

(*iv*) Write a short note on length contraction.