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**NA—47—2023**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2023**

**(New Pattern)**

**PHYSICS**

**Paper—VII**

**(Statistical Physics, Electromagnetic and Theory of Relativity)**

**(Monday, 11-12-2023)**

**Time : 2.00 p.m. to 4.00 p.m.**

*Time—2 Hours*

*Maximum Marks—40*

*N.B. :— All questions are compulsory.*

1. Derive an expression for Fermi-Dirac distribution law. 15

*Or*

(i) State and explain Macro and Microstate. 8

(ii) Obtain an expression for relation between entropy and probability. 7

2. Derive Lorentz transformation. 15

*Or*

(i) Obtain an expression for wave equation of free space. 8

(ii) Explain Faraday's law of electromagnetic induction. 7

P.T.O.

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3. Write short notes on (any two) :

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- (i) Permutations and Combinations
- (ii) Electron gas
- (iii) Displacement current
- (iv) Time dilation.

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