This question paper contains **2** printed pages]

VA—40—2024

FACULTY OF SCIENCE

B.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(New Course)

PHYSICS

Paper–II

(Mathematical Methods in Physics)

(Saturday, 7-12-2024)   **Time : 10.00 a.m. to 12.00 noon**

Time—2 Hours   *Maximum Marks—40*

N.B. :— (*i*)   *All* questions are compulsory.

(*ii*)   Non-programmable calculators are allowed.

(*iii*)   Figures to the right indicate full marks.

(*iv*)   Symbols have their usual meaning.

1.   Explain Argand diagram for multiplication and division of two complex
numbers.   15

Or

(*a*)   Explain physical significance of gradient.   8

(*b*)   Explain physical significance of curl.   7

P.T.O.

2. Define Fourier series and evaluate the coefficients of Fourier series : 15

a_o, a_n and b_n.

Or

(a) Explain chain rule. 8

(b) Explain total partial differentiation in detail. 7

3. Attempt any *two* of the following :

(a) Explain properties of Moduli and argument. 5

(b) State Stokes' theorem and Gauss's divergence theorem. 5

(c) Find the maxima and minima of a function $f(x) = 3x^2 + 5x^3$ 5

(d) State Dirichlet's condition. 5