Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU

Department of Research & Development
Mid - Term Examinations - SEPTEMBER 2024

Odd Semester: Ph.D. Course Work	**Date**: 27 /09/2024
Course Code: MAT 812	**Time**: 2:00pm – 3:30pm
Course Name: Value Distribution Theory and Delay Differential Equations	**Max Marks**: 50
Department: Mathematics	**Weightage**: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 5 marks.		**4Qx5M=20M**
1	Define the following with examples. a)Entire function. b)Meromorphic function.	**5 Marks**
2	Find the order and type of $f(z) = e^z$.	**5 Marks**
3	Let $f_1, f_2 \dots f_m$ be meromorphic function in C then show that $T(r, f_1 + f_2 + \cdots + f_m) \leq T(r, f_1) + T(r, f_2) \dots + T(r, f_m) + \log m.$	**5 Marks**
4	Let $f_1, f_2 \dots f_m$ be meromorphic function in C then show that $T(r, f_1 f_2 \dots f_m) \leq T(r, f_1)T(r, f_2) \dots T(r, f_m).$	**5 Marks**

Part B

Answer ALL Questions. Each question carries 15 marks.		**2QX15M=30M**
5	State and prove Nevanlinna first fundamental theorm.	**15 Marks**
6	Let $f(z)$ be a meromorphic function in C, then prove that $T\left(r, \frac{af+b}{cf+d}\right) = T(r, f) + O(1)$ where $ad - bc \neq 0$.	**15 Marks**