

Roll No.



**PRESIDENCY  
UNIVERSITY**  
BENGALURU

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

<b>Odd Semester:</b> Ph.D. Course Work	<b>Date:</b> 28 /09/2024
<b>Course Code:</b> MAT 833	<b>Time:</b> 2:00pm – 3:30pm
<b>Course Name:</b> Fluid Mechanics	<b>Max Marks:</b> 50
<b>Department:</b> Mathematics	<b>Weightage:</b> 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**

<b>Answer ALL the Questions. Each question carries 5 marks.</b>		<b>4Qx5M=20M</b>
<b>1</b>	Define the fluid properties	<b>5 Marks</b>
<b>2</b>	What do you understand by total pressure and centre of pressure?	<b>5 Marks</b>
<b>3</b>	Discuss the types of flow pattern	<b>5 Marks</b>
<b>4</b>	What are the methods of dimensional analysis. Describe the Rayleigh's method for dimensional analysis.	<b>5 Marks</b>

**Part B**

<b>Answer ALL Questions. Each question carries 15 marks.</b>		<b>2QX15M=30M</b>
<b>5</b>	Write Euler's equation of motion along a streamline and integrate it to obtain Bernoulli's equation. state all assumptions made. List three applications of Bernoulli's equation for real fluid.	<b>15 Marks</b>
<b>6</b>	Define the equation of continuity. Obtain an expression for continuity equation for a three-dimensional flow.	<b>15 Marks</b>