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# PRESIDENCY UNIVERSITY

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Bengaluru

**Mid Term Examinations - October 2026**

**Date:** 06/10/2026 **Time:** 11:45 AM - 01:15 PM

**Course Code:** CIV2503 **Course Name:** Fluid Mechanics

**Semester:** Third Semester **Max. Marks:** 50 **Weightage:** 50%

| CO - Levels | CO1 | CO3 | CO4 |
|---|---|---|---|
| Marks | 8 | 30 | 52 |

**PART A: Answer Following Questions. 10 M**

| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 1 | Define the following terms related to Fluid statics:<br>a) Hydrostatics b) Aerostatics | 2 | CO1 | BT1 |
| 2 | Define the following<br>a) Internal flow b) External Flow | 2 | CO1 | BT1 |
| 3 | List any two assumptions made in derivation of Bernoull's equation. | 2 | CO4 | BT1 |
| 4 | Define the following<br>a) Steady flow b) Unsteady flow | 2 | CO1 | BT1 |
| 5 | Draw the flow pattern for laminar flow as per Reynold's experiment. | 2 | CO1 | BT1 |

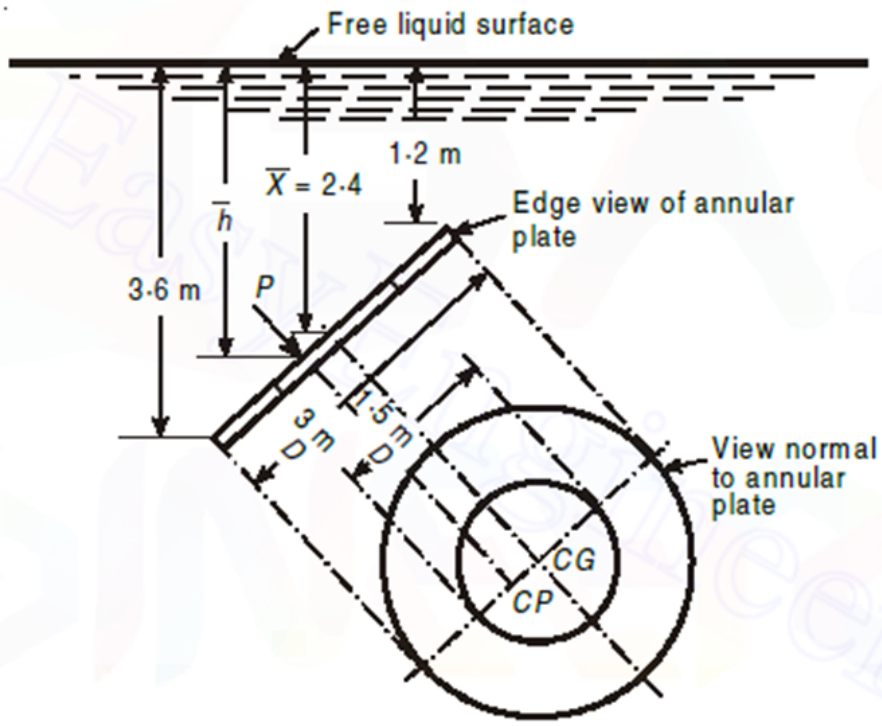
**PART B : Answer Any 1 Following Questions. 10 M**

| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 6 | A 0.3 m pipe carries water at a velocity of 24.4 m/s. At points A and B measurements of pressure and elevation were respectively 361 $kN/m^2$ and 288 $kN/m^2$ and 30.5 m and 33.5 m . For steady flow, find the loss of head between A and B | 10 | CO4 | BT3 |
| 7 | Water is flowing through a pipe of 5 cm diameter under a pressure of 29.43 $N/cm^2$ and with mean velocity of 2.0 m/s. Find the total head or total energy per unit weight of the water at a cross section , which is 5 m above the datum line. | 10 | CO4 | BT3 |

**PART C: Answer Any 1 Following Questions. 15 M**

| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 8 | a) With the help of neat sketch explain working principle of Venturimeter<br>b) An oil of specific gravity 0.8 is flowing through a orificemeter having inlet diameter 20 cm and orificemeter diameter 10 cm. The oil-mercury differential monometer shows a reading of 25 cm of mercury. Calculate the discharge of oil through the Orificemeter . Take Cd =0.61. | 15 | CO4 | BT3 |
| 9 | a) With the help of neat sketch explain working principle of Orificemeter<br>b) A horizontal venturimeter with inlet diameter 20 cm and throat diameter 10 cm is used to measure the flow of oil of sp.gravity = 0.8. The discharge of oil through venturimeter is 60 litres/sec. Find the reading of the oil-mercury differential monometer. Take Cd = 0.98 | 15 | CO4 | BT3 |

**PARTD: Answer Any 1 Following Questions. 15 M**

| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 10 | a) Determine the total pressure on a circular plate of diameter 1.5 m which is placed vertically in water in such a way that the Centre of the plate is 3 m below the free surface of water. Find the Centre of pressure also.<br>b) Determine the total pressure and Centre of pressure on an isosceles triangular plate of base 4 m and altitude 4 m. when its immersed vertically in an oil of specific gravity 0.9. The base of the plate coincides with free surface of oil. | 15 | CO3 | BT3 |
| 11 | An annular plate 3 m external diameter and 1.5 m internal diameter is immersed in water with its greatest and least depths below water surface as 3.6 m and 1.2 m respectively as shown in figure. Determine the total pressure and the position of the centre of pressure on one face of the plate.<br><br> | 15 | CO3 | BT3 |