



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

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COIMBATORE-641 035, TAMIL NADU



DEPARTMENT OF AEROSPACE ENGINEERING

Faculty Name : **Dr.A.Arun Negemiya,** Academic Year : **2024-2025 (Odd)**
AP/ Aero
Year & Branch : **II AEROSPACE** Semester : **III**
Course : **23AST202 – Fluid Mechanics for Aerospace**

UNIT I - FLUID PROPERTIES AND FLOW CHARACTERISTICS

1. An Orifice Meter with orifice diameter 0.15 m is inserted in a pipe of 30 cm diameter. The pressure difference measured by mercury oil differential manometer on the two sides of orifice meter gives a reading of 40 cm of Mercury. Find the rate of flow of oil of $G = 0.8$, when $C_d = 0.62$. π

Steps:

$$D_1 = 15 \text{ cm } D_2 = 30 \text{ cm}$$

$$a_1 = 176.7 \text{ sq.cm and } a_2 = 706.85 \text{ sq.cm}$$

$$h = x(S_2/S_1) - 1$$

$$h = 40((13.6/0.8) - 1) = 64.0 \text{ cm}$$

$$C_d = 0.62$$

$$Q = (C_d a_1 a_2 (2gh)^{1/2}) / (a_1^2 - a_2^2)^{1/2}$$