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DEPARTMENT: MECHATRONICS ENGINEERING

COURSE CODE: ENG 214 C.O

COURSE TITLE: FLUID MECHANICS

ASSIGNMENT NEW ON VENTURIMETER

1. Calculate the pressure difference between inlet and throat in N/m2.

**Relative density= 0.8**

**At inlet, d1= 150mm**

Area, a1= =

= = 17673.75mm2

**At throat, d2= 75mm**

Area, a2= =

= = 4418.43mm2

**Q= 40 lit/sec, Cd= 0.96**

Q= Cd

0.04= 0.96\*

0.04= 19404.52545 \*

=

h=

h=4.249 \* 10-12mm of liquid

Therefore, h= 4.249 m of liquid

H=

4.249=

Z1 -Z2= 150mm= 0.15m

4.249= 0.15m

4.249+0.15=

4.399=

4.399 \* 0.8 \* 9.81 \* 1000 =

P1 P2= 34.523 KN/m2

Hence the pressure diff= 34.523KN/m2

1. Calculate discharge of oil and the pressure difference between the entrance section and the throat section. Take coefficient of meter as 0.98 and specific gravity of mercury as 13.6.

**At inlet, d1= 300mm= 0.3m**

Area, a1= =

= = 0.07m2

**At throat, d2= 150mm= 0.15m**

Area, a2= =

= = 0.01767m2

Specific gravity of heavy liquid, Sm= 13.6

Specific gravity of oil, So= 0.9

Reading of diff manometer, x= 250mm= 0.25m

H=

=x \*

=0.25

=3.53m of oil

i). Discharge of oil

Q= Cd

Q= 0.98\*

Q= 0.1489m3/s

ii). Pressure diff between the entrance and throat section

H=

3.53=

Z1 -Z2= 300mm= 0.3m

3.53=

3.83=

3.83=

P1-P2= 3.83 \* 0.9 \* 9.81= 33.8KN/m2