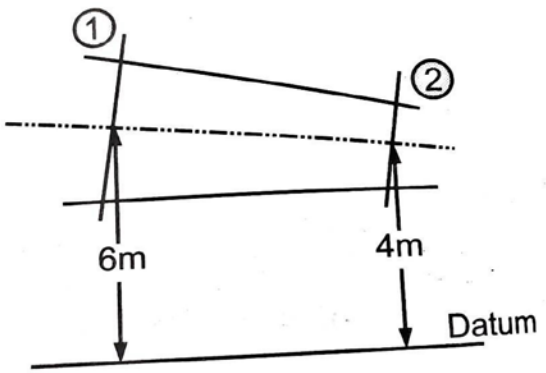
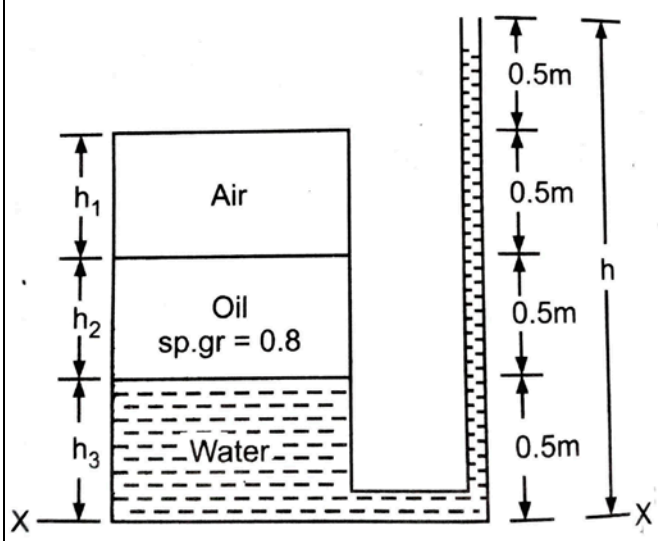
Roll No. _____

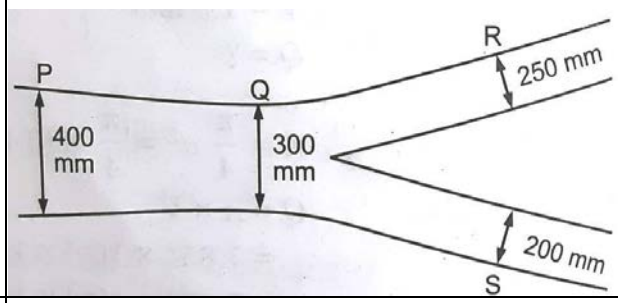
END SEMESTER EXAMINATION
SEMESTER- III

COURSE CODE : AE-406 | **DURATION : 3 (THREE)HRS**
COURSE TITLE : FLUID MECHANICS & MACHINES | **MAXIMUM MARKS : 75**
SESSION : JULY-DEC 2020 | **PASS MARKS : 35 %**

NOTE:
1. *All the questions are compulsory*
2. *Attempt any 5 (five) questions.*
3. *Mark for each question is shown against it.*
4. *Assume suitable logical data wherever necessary.*

1.	**(a)**	What is surface tension ? Explain the phenomenon of Surface tension.	**(5)**
	(b)	Define the following with mathematical formula: (a) Viscosity (b) Density (c) Specific weight (d) Specific Volume (e) specific gravity	**(5×2)**
2.	**(a)**	The diameter of pipe changes from 200 mm at a section 6 m above datum to 100 mm at a section 4 m above datum. The pressure of water at first section is 500 kPa. If the velocity of flow at the first section is 1 m/s, determine the intensity of pressure at the second section using Bernoulli's theorem.  	**(15)**
3.	**(a)**	Explain with the help of neat sketch the construction and working of a Pelton Wheel turbine.	**(7)**
	(b)	Define : (a) absolute pressure (b) gauge pressure (c) vacuum pressure (d) Atmospheric pressure	**(8)**
4.	**(a)**	Explain the principle of Venturimeter with a neat sketch. Derive the expression for the rate of flow	**(8)**
	(b)	Find the pressure intensity of air in the closed tank shown in the fig.below:	**(7)**



5.	**(a)**	Explain the working of a single stage centrifugal pump with sketch. What is priming? Why is it necessarily?	**(10)**
	(b)	Differentiate between Laminar flow and turbulent flow.	**(5)**
6.	**(a)**	What is Continuity equation? Derive an expression for continuity equation for one dimensional flow.	**(7+8)**
	(b)	A pipe PQ branches into two pipes R and S as shown in the fig.below. The pipe has diameter of 400 mm at P, 300 mm at Q, 250 mm at R and 200 mm at S. Determine the discharge at P if the velocity at P is 2 m/s. Also determine the velocities at Q and R, if the velocity at S is 4 m/s. 	
7.	**(a)**	What is current meter ? Explain with sketch different types of current meter.	**(10)**
	(b)	Differentiate between notch and weir.	**(5)**
8.	**(a)**	With the help of a neat sketch explain the construction and working of a hydraulic press. A hydraulic press has a ram of 200 mm and a plunger of 40 mm diameter. It is used to lift a weight of 4 KN. A lever is used for applying for e to the plunger, find the force required at the end of lever if the ratio l/L is 1/12.	**(8+7)**

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