Set - I

Code - 1018

G. S. Mandal's

Maharashtra Institute of Technology, Aurangabad

(An Autonomous Institute)

END SEMESTER EXAMINATION

Second Year B.Tech (Agricultural Engineering) – Feb/Mar-2023

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

Duration : 2 Hrs **Max. Marks : 50** **Date :** 08 FEB 2023

Instructions :

i) **All questions are compulsory**

ii) **Assume suitable data wherever necessary and clearly state it**

iii) **Figures to right indicate full marks**

Q. 1	Answer any five(Marks:10)				
		Marks	CO	BL	PI
a)	Define Buoyancy.	2	CO1	BL1	
b)	What do you mean by fundamental units and derived units? Give examples.	2	CO6	BL1	
c)	Define the term: Notch, Weir.	2	CO3	1	
d)	Define Kinetic Energy Correction and Momentum Correction Factor	2	CO4	1	
e)	How to calculate rate of flow or discharge?	2	CO2	2	
f)	What do you mean by dimensionless number? Name any four.	2	CO6	1	
g)	State and prove Pascal's law.	2	CO2	2	
h)	Define Reynold's Number.	2	CO6	1	
Q.2	A rectangular plane surface is 2 m wide and 3 m deep. It lies in vertical plane in water. Determine the total pressure and position of centre of pressure on the plane surface when its upper edge is horizontal and a. coincides with water surface, b. 2.5 m below the free water surface.	8	CO3	3	
Q.3	Explain the principle of venturimeter with neat sketch. Derive the expression for the rate of flow of fluid through it.	8	CO4	3	
Q.4	What is Euler's equation? How will you obtain Bernoulli's equation from it?	8	CO4	3	

Q.5	Find an expression for the discharge over a rectangular weir in terms of head of water over the crest of the weir **OR (optional)** Determine the height of a rectangular weir of length 6 m to be built across a rectangular channel. The maximum depth of water on the upstream side of the weir is 1.8 m and discharge is 2000 lit/s. take $C_d = 0.6$ and neglect end contraction	8	CO5	3	
Q.6	State and describe Buckingham's π-theorem **OR(optional)** What are the methods of dimensional analysis? Describe the Rayleigh's method for dimensional analysis	8	CO6	3	

Note:- All course outcomes shall be addressed.