Q.P. Code: 20CE0109

R20

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Regular & Supplementary Examinations March-2023

FLUID MECHANICS

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	Define the physical properties of fluids and Write its units.		CO1	L2	12M
	OR				
2	**a**	State Pascal's law and Derive pressure variation in liquid at rest.	CO1	L2	6M
	b	Derive the Equation for Center of Pressure of vertical plane surface.	CO1	L2	6M

UNIT-II

3	**a**	Define Local Acceleration and Velocity Potential function with formulae.	CO2	L2	4M
	b	A 30 cm dia. pipe conveying water branches into two pipes of dia. 20 cm and 15 cm respectively. If the average velocity in the 30 cm dia. pipe is 2.5 m/s. Find the discharge in this pipe. Also determine the velocity in 15 cm pipe. If the average velocity in 20 cm diameter pipe is 2 m/s.	CO2	L3	8M
	OR				
4	Derive Continuity Equation in 3-Dimensional flow.		CO2	L3	12M

UNIT-III

5	Derive the Bernoulli's energy equation with assumptions.		CO3	L3	12M
	OR				
6	**a**	Give short notes on Energy correction factor and momentum correction factor.	CO3	L2	6M
	b	A rectangular notch 2m wide as a constant head of 500mm. Find the discharge over the notch ,if co-efficient of discharge for the notch is 0.62 and g = 9.81.	CO4	L2	6M

UNIT-IV

7	Find the head lost due to friction in a pipe of dia 300mm & length 50m through which water is flowing at a velocity of 3 m/s using : i) Darcy's formula ii) Chezy'sformula for which C = 60. Take kinematic viscosity of for water =0.01 stoke.		CO5	L3	12M
	OR				
8	A syphon is Ø 200mm connects two reservoirs having a difference in elevation of 20m. The length of the syphon is 500m and the summit is 3m above the water level in the upper reservoir. The length of the pipe from upper reservoir to the summit is 100m. Determine the discharge through the syphon & also pressure at the summit. Neglect minor losses. The coefficient of the friction f = 0.005.		CO5	L3	12M

UNIT-V

9	Explain in detail about Reynolds experiment.		CO6	L2	12M
	OR				
10	Derive an expression for velocity distribution in turbulent flow.		CO6	L3	12M

*** END ***