Q.P. Code: 19CE0109 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular Examinations July-2021

FLUID MECHANICS

(Civil Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Define viscosity, kinematic viscosity, Newton's law of viscosity?	L1	**6M**
	b	The space b/w two square parallel plates filled with oil. Each side of the plate is 60 cm. The thickness of oil film is 12.5. The upper plate which moves at 2.5m/sec requires a force 98.1 N to maintain the speed. Determine kinetic viscosity of the oil. If the specific gravity of the oil 0.95 and dynamic viscosity of oil.	L3	**6M**

OR

2	a	Define about total pressure and center of pressure.	L1	**6M**
	b	A circular plate 3mm dia is immersed in water in such a way that its greater and least depth below the surface or 4m and 1.5 m respectively. Determine the total pressure and center of pressure.	L3	**6M**

UNIT-II

3		Derive Continuity Equation in 3-Dimensional flow.	L3	**12M**

OR

4		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.	L2	**12M**

UNIT-III

5		The water is flowing through a pipe having diameter of 20 cm and 10 cm at section 1 & 2 respectively. The rate of flow through pipe is 35 lit/sec. The section 1 is 6m above the datum and section 2 is 4m above the datum. If the pressure at the section 1 is 39.24 N/cm^2 . Find the intensity of pressure at the section 2.	L2	**12M**

OR

6		Derive the expression of discharge over a Triangular notch or Weir (V- notch).	L2	**12M**

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 : a) Darcy's formula b) Chezy's formula for which C = 60. Take kinematic viscosity of for water =0.01 stoke?	L1	**12M**

OR

8		Briefly explain about Hardy cross method.	L1	**12M**

UNIT-V

9	a	Define turbulent flow. What are the causes of turbulent flow	L2	**6M**
	b	Derive the equation for pressure drop in laminar flow	L1	**6M**

OR

10		Derive the Hagen poiseuille equation.	L2	**12M**

*** END ***