

Reg. No:

--	--	--	--	--	--	--	--	--	--

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations December-2021

FLUID MECHANICS & HYDRAULIC MACHINERY

(Common to ME & AGE)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a State Pascal's law. What do you understand the terms Absolute, Gauge, atmospheric & vacuum pressure? **6M**
- b What is the gauge pressure at a point 3m below the free surface of a liquid having a density $1.53 \times 10^3 \text{ kg/m}^3$. If the atmospheric pressure is equivalent to 750mm of mercury? The Specific gravity of mercury is 13.6 and density of water = 1000 kg/m^3 . **6M**

OR

- 2 a How does viscosity of a fluid vary with temperature? **6M**
- b What are different types of Mechanical Pressure Gauges? Explain briefly about Bourdon's Pressure Gauge? **6M**

UNIT-II

- 3 Obtain an expression for continuity equation for a one & three - dimensional flow. **12M**

OR

- 4 a Write short notes on velocity and acceleration function and also define local and convective acceleration. **6M**
- b The following case represent the two velocity components, determine the third velocity component such then they satisfy the continuity equation **6M**

UNIT-III

- 5 Derive the expression for head loss in pipes due to friction by using Darcy - Weisbach equation. **12M**

OR

- 6 A pipe line of 0.6 m diameter is 1.5 km long. To increase the discharge, another line of same diameter is introduced parallel to the first in the second half of the length .Neglecting minor losses, find the increase in discharge if $4f = 0.04$. The head at inlet is 300 mm. **12M**

UNIT-IV

- 7 a Write a short note on model laws. **6M**
- b State and derive Reynolds's model law **6M**

OR

- 8 Write a note on i) Euler's model law ii) Weber model law iii)Mach model law **12M**

UNIT-V

- 9 A pelton wheel is to be designed for a head of 60 m when running at 200r.p.m. The pelton wheel develops 95.6475kW shaft power. The velocity of the buckets =0.45 times the velocity of the jet, overall efficiency =0.85 and co-efficient of the velocity is equal to 0.98 **12M**

OR

- 10 a Derive the expression for specific speed. **6M**
- b Write a note on minimum starting speed. **6M**

*** END ***