S. B. Roll. No.....

FLUID MECHANICS
3rd Exam/Civil/5701/Nov'24
(For 2023 Batch)

Duration: 3Hrs. **M.Marks:50**

SECTION-A

Q1. Give answer in one line any nine of the following. **9x1=9**

a. Define fluid mechanics?
b. Define Hydro kinematics.
c. What is real fluid?
d. Define intensity of pressure.
e. Define gauge pressure.
f. Enlist various types of losses in centrifugal pump.
g. Define uniform flow.
h. What is venturimeter?
i. Define knocking and hammer blow.
j. What is co-efficient of velocity?
k. What are the different head losses in open channel?
l. Define pressure.

SECTION-B

Q2. Attempt any five questions. **5x4=20**

i. Define the following: i) Mass Density ii) Specific gravity iii) Surface tension iv) Cohesion
ii. Find the depth of alcohol of specific gravity 0.789 which produces intensity of pressure equal to $2kN/m^2$. Also find the pressure head in terms of water and mercury.
iii. What is a venturimeter? Explain its working.
iv. Name the major and minor losses of head during flow through a pipeline.
v. What does continuity equation state and derive its expression.
vi. The reading of a barometer is found to be equal to 72cm mercury. What shall be the value of atmospheric pressure in terms of metre of water and N/m^2, if the specific gravity of mercury is 13.6
vii. State Bernoulli's theorem and explain its two applications.

SECTION-C

Q3. Attempt any three questions. **3x7=21**

a. State the conditions for the following sections to be most economical and also make neat diagrams of them. i) Rectangular Section ii) Trapezoidal Section
b. In a pipe of 300 mm diameter and 800m length, an oil of specific gravity 0.8 is flowing at the rate of $0.45m^3/s$. Find: i) Head lost due to friction. ii) Power required to maintain the flow. Take kinematic viscosity of oil as 0.3 stoke.
c. State Pascal's law of pressure and give two applications of it.
d. Distinguish between Centrifugal pump and reciprocating pump.
e. Using Manning's formula, determine the discharge through a rectangular channel 3m wide and 2m deep having longitudinal slope of 1 in 1500. Use N=0.012 in manning's formula.