



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

MAKEUP EXAMINATION – JAN 2023

Course Code: CIV 208

Course Name: Fluid Mechanics

Program : B.Tech

Date: 28-JAN- 2023

Time: 1.00 PM to 4.00 PM

Max Marks: 80

Weightage: 40 %

Instructions:

- (i) Read the all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer all the Questions. Each Question carries FOUR marks.

(5Qx 4M= 20M)

1. Define fluid and explain the effect of shear stress on solids and fluids. (C.O.1.) [Knowledge]
2. State Bernoulli's equation and list assumptions made for derivation of Bernoulli's equation. (C.O.3.) [Knowledge]
3. State and Explain Archimedes' principle. (C.O.2.) [Knowledge]
4. List the major and minor losses through pipe. (C.O.3.) [Knowledge]
5. With neat diagram mention the parts of venturimeter (C.O.3.) [Knowledge]

Part B

Answer all the Questions. Each Question carries EIGHT marks.

(3Qx8M=24M)

6. An orifice meter is a device with a hole in it, which measures how fast a fluid is flowing, by recording the pressure decrease across the hole. With neat diagram explain the working principle of Orifice meter. (C.O.2.) [Comprehension]
7. The head loss represents the additional height that the fluid needs to be raised by a pump in order to overcome the frictional losses in the pipe. List and explain the major and minor losses through pipe. (C.O.3.) [Comprehension]
8. Find the Reynolds number if a fluid of viscosity 0.4 Ns/m^2 and relative density of 900 Kg/m^3 through a 20 mm pipe with a Velocity of 2.5 m/s ? (C.O.2.) Comprehension]

Part C

Answer all the Questions. Each Question carries TWELVE marks. (3Qx12 M=36M)

9. Find the head loss due to friction in a pipe of diameter 300 mm and length 50 m, through which water is flow at a velocity of 3 m/s using a) Darcy formula, b) Chezy's formula for which $C = 60$
Take kinematic viscosity of water = 0.01 stoke. (C.O.3) [Application]
10. Three pipes of 400 mm, 200 mm and 300 mm diameters have lengths of 400 m, 200 m and 300 m respectively. They are connected in series to make a compound pipe. The ends of this compound pipe are connected with two tanks whose difference in levels is 16 m. If co-efficient of friction for these pipes is same and equal to 0.005, determine the discharge through the compound pipe considering
a) Minor losses also b) Neglecting minor losses (C.O.3.) [Application]
11. The water is flowing through a pipe having diameter 30 cm and 15 cm at sections 1 and 2 respectively. The rate of flow through pipe is 35 litres/sec. the section 1 is 6 m above datum and section 2 is 4 m above datum. If the pressure at section 1 is 39.24 N/cm^2 .
Find the intensity of pressure at section 2. (C.O.3.) [Application]