

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B. Tech. Winter 2019 - 20 Examination

Semester: 3**Subject Code: 203104205 /03104202****Subject Name: Introduction to Fluid Mechanics / Fluid Mechanics-1****Date: 29/11/2019****Time: 2:00pm to 4:30pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (All are compulsory) (Each of one mark) (15)

1. An ideal fluid is one which is

(a) Compressible	(b) non viscous and incompressible
(c) has low density	(d) elastic and viscous
2. Surface tension is defined as _____.
3. The unit of dynamic viscosity of a fluid is _____.
4. Bernoulli's equation cannot be applied when the flow is

(a) Rotational	(b) turbulent
(c) Unsteady	(d) All of the above
5. Relative density of mercury is

(a) 1	(b) 9.8
(c) 13.6	(d) none of the above
6. The Piezometric head is expressed by _____
7. A Newtonian fluid is defined as the fluid which _____
8. If the Reynolds number is less than 2000, the flow in a pipe is
9. The unit of pressure one bar is
10. Reynolds number signifies the ratio of _____
11. Current meter is used to measure _____
12. Property of fluid that describes its internal resistance is known as _____
13. A simple fluid pressure measuring device used is called _____
14. Define density of fluid.
15. Define capillarity.

Q.2 Answer the following questions. (Attempt any three) (15)

- A) State and prove the Pascal's law.
- B) Water is flowing through a pipe of 5cm diameter under a pressure of 29.43 N/cm^2 and with mean velocity of 2 m/s. Find the total head of water at a cross section, which is 5 m above the datum line.
- C) Explain Reynolds experiment with neat diagram.
- D) Explain various types of orifices.

Q.3 A) Explain types of fluid flow. (07)

- B) Explain various types of hydraulic co-efficient.. (08)

OR

- B) Determine the total pressure on a circular plate of diameter 1.5m which is placed vertically in water (08)
 in such a way that the centre of the plate is 3m below the free surface of the water. Find the position of centre of pressure also.

Q.4 A) Classify various types of fluids. (07)

- B) write short notes on- (08)
 - (1) Differential manometers.
 - (2) Flow net

OR

- B) Prove that the velocity distribution across the section of a pipe is parabolic for laminar flow. (08)