Total No. of Questions : 4]

SEAT No. :

PE-530

[Total No. of Pages : 2

[6578]-3
S.E. (Civil) (Insem.)
FLUID MECHANICS
(2019 Pattern) (Semester - III) (201003)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data if required.***
5) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator (nonprogrammable) and steam tables is allowed.***

Q1) a) Differentiate between: i) Absolute and Gauge Pressure ii) Simple manometer and differential manometer. **[5]**

b) State and explain Newton's law of viscosity. **[5]**

c) Define gauge pressure, vacuum pressure and absolute pressure. **[5]**

OR

Q2) a) Define Specific weight, dynamic viscosity and capillarity. **[5]**

b) Derive an expression for a pressure inside a liquid jet of radius R and surface tension. **[5]**

c) What is meant by stability of floating and submerged body and what are the different stability conditions for floating and submerged body. **[5]**

Q3) a) Define the following and give one practical example for each : **[5]**

i) Laminar flow

ii) Turbulent Flow

iii) Steady flow

iv) Uniform Flow

v) Varied Flow

P.T.O.

b) Write a short note on :- **[5]**

i) Stream line

ii) Streak Line

iii) Path line

iv) Hydrokinetics

v) Hydro kinematics

c) The diameter of a pipe at the section 1 and 2 are 15 cm and 20 cm respectively. Find the discharge through the pipe if velocity of water at section 1 is 4 m/s. Determine also the velocity at section 2. **[5]**

OR

Q4) a) Explain how Bernoulli's theorem, applied to two points in flow, is modified to account for **[5]**

i) Loss of head,

ii) Installation of pump,

iii) Non-uniform velocity variation in pipe.

b) Explain in brief:- **[5]**

i) Velocity Potential

ii) Stream Function

c) Determine the total pressure on a circular plate of diameter 1.5 m, which is placed vertically in water in such a way that centre of plate is 2m below the free surface of water. Find the position of centre of pressure also. **[5]**