Q. Define fluid Mechanics and its branches?

Ans: Fluid Mechanics:

It is the Branch of physics concerned with the mechanics of fluids (liquid, gases and plasma) and the forces on them

It can divided into two branches.

(1) Fluid statics

(2) Fluid dynamics

(1) Fluid statics:

It is branch of fluid ~~statics~~ mechanics that studed fluids at rest. it ombraces the study of the condition under which fluid are at rest in stable equilibrium.

(2) Fluid dynamics:

It is a subdisipline of fluid mechanics that deals with fluid flow. The science of liquids and gases in motion.

Q. Define an absolute and gauge pressure?

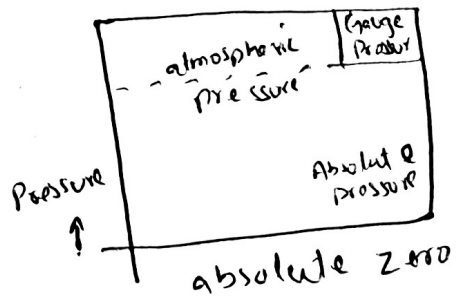
Ans: Absolute pressure:

If pressure is measured relative to absolute zero it is called absolute pressure.

Gauge pressure:

When it is measured relative to atmospheric pressure as base, it is called gauge pressure. If pressure is below atmospheric, it is ~~called~~ vacuum.

$$P_{abs} = P_{atm} + P_{gauge}$$



Q Given data

Height of Tank = 7648 mm
= 7.648m

Cross section area = $0.1 m^2$

Specific weight = $9810 N/m^3$ = $9.810 kN/m^3$

Required: (a) Pressure at surface of water =?
(b) At center
(c) at bottom

Sol) Pressure at surface of water
$h = 0$

so $P_w(surface) = \gamma h = 9810 \times 0$

$P_w = 0 kN/m^2$

(b) Pressure at center of Tank

$h = \frac{7648}{2} = 3824 mm = 3.824m$

$P_{w(centre)} = 9.810 \times 3.824 = 37.51 kN/m^2$

(c) Pressure at bottom $h = 7648 = 7.648m$

$P_{w(bottom)} = 9.810 \times 7.648$

$P_{w(bottom)} = 75.02 kN/m^2$