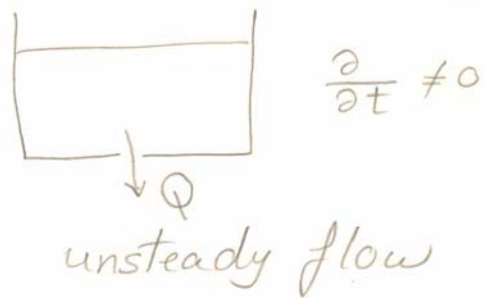
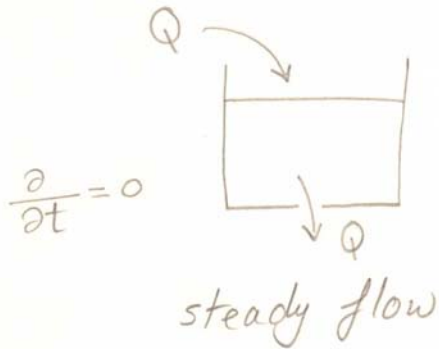


Question two (6 marks)

Differentiate between:

1. Steady and unsteady flow.

② steady and unsteady flow (with respect to time)
[from time to time]

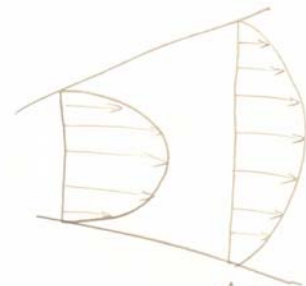
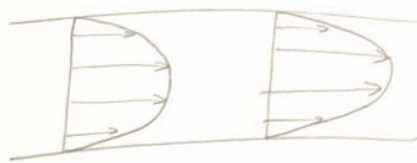


* steady flow: pressure, velocity, flow rate (flow parameters) are constant with respect to time.

* unsteady flow: any of the flow parameters change with time.

2. Uniform and non-uniform flow.

③ uniform and non-uniform flow [from point to point]



* uniform flow: The velocity at a given instant is the same in magnitude and direction at every point in the fluid.

* non-uniform flow: The velocity at a given instant changes from point to point.

3. Laminar, transient and turbulent flow.

④ Laminar, transient and turbulent flow

laminar flow
 $Re < 2000$

transient flow
 $2000 < Re < 4000$

turbulent flow
 $Re > 4000$

* laminar flow: (viscous flow, streamline flow)
The particles move in parallel lines (layers).

* Transient flow at which the dye filament begin to oscillate.

* Turbulent flow the dye color is diffused over the whole cross-section.

$$Re = \frac{\rho V d}{\mu}$$

Reynolds number

Question three (8 marks)

A) Draw T.E.L. and H.G. for an orifice meter, mentioned that the flow is real and the pressure is negative at throat.