

Section-2

Q2) There are different types of open channels. Depending on the cross section type, open channels are classified into two types - Prismatic channels and Non prismatic channel. A brief discussion of these two types of open channel is given below.

Prismatic channels -

If the cross-section of a channel is uniform throughout its length and the bottom slope is constant, it is called prismatic channel.

Key Features -

- i) Uniform channel cross-section throughout the length.
- ii) Constant bottom slope.

Prismatic channels can be triangular, rectangular, parabolic, trapezoidal or circular.

- (iii) Artificial channels are usually prismatic channels.

Classification Based on flow characteristics

- | | |
|-----------------------|---------------------------|
| i) <u>Steady flow</u> | (ii) <u>Unsteady flow</u> |
|-----------------------|---------------------------|

Steady flow is defined as the

Unsteady flow is that type of

type of flow in which the fluid characteristics like velocity, pressure, density etc, at a point do not change with time

flow in which the velocity, pressure or density at a point changes with respect to time

2) Thus for steady flow

Thus for unsteady flow,

$$\left(\frac{dv}{dt}\right)_{x_0, y_0, z_0} = 0$$

$$\left(\frac{dv}{dt}\right)_{x_0, y_0, z_0} \neq 0$$

$$\left(\frac{dp}{dt}\right)_{x_0, y_0, z_0} = 0 \quad \frac{dp}{dt} = 0$$

$$\left(\frac{dp}{dt}\right)_{x_0, y_0, z_0} \neq 0 \text{ etc.}$$