Angular Displacement

It may be defined as the angle described by
to the time. For example, let a line *OB* has its inclin

Fig. If this line moves from *OB* to *OC*, through a short interval of time δt, then $\delta\theta$ is know *displacement* of the line *OB*.

Since the angular displacement has bo direction, therefore it is also a *vector quantity.*

Representation of Angular Displ a Vector

In order to completely represent an angul ing three conditions :

1. *Direction of the axis of rotation*. It is f of rotation, in which the angular displacement tal of rotation.

2. *Magnitude of angular displacement*. It the axis of rotation, to some suitable scale.

3. *Sense of the angular displacement.* I states that if a screw rotates in a fixed nut in a clo is clockwise and an observer is looking along th away from the observer. Similarly, if the angula head will point towards the observer.

Angular Velocity

It may be defined as the rate of change c usually expressed by a Greek letter ω (omega). M

$$\omega = d\theta / dt$$

Since it has magnitude and direction, ther by a vector following the same rule as described i

Note : If the direction of the angular displacement is angular displacement with respect to time is termed as

Equations of Angular Motion

The following equations of angular motion corresponding to linear motion are important from the subject point of view :

1. $\omega = \omega_0 + \alpha.t$
2. $\theta = \omega_0.t + \frac{1}{2}\alpha.t^2$
3. $\omega^2 = (\omega_0)^2 + 2\alpha.\theta$
4. $\theta = \frac{(\omega_0 + \omega)t}{2}$

where ω_0 = Initial angular velocity in rad/s,
ω = Final angular velocity in rad/s,

t = Time in secoı
θ = Angular displ
α = Angular acce

Note : If a body is rotating at the rate of N r.p.m. (revolı
$\omega = 2\pi N / 60$ rad/s

Relation between Linear Motion

Following are the relations between the lin

Particulars	*Linear m*
Initial velocity	u
Final velocity	v
Constant acceleration	a
Total distance traversed	s
Formula for final velocity	$v =$
Formula for distance traversed	$s =$
Formula for final velocity	$v^2 =$