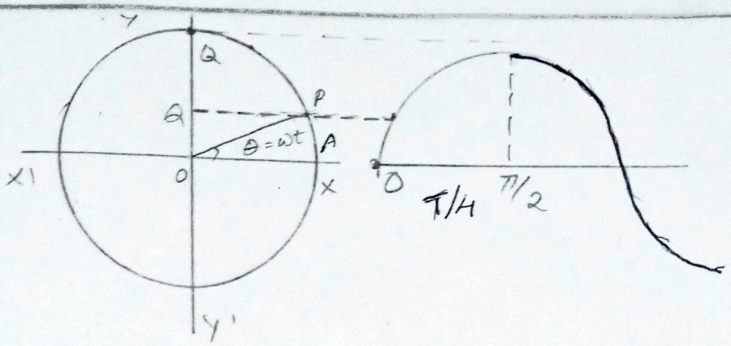
26/10/23

UNIT - 3

Day 31

Oscillation

- Motion - movement of particles (system)
  - ⇒ from its fixed point.
  - ⇒ Particle moves from one place to another place.
- Simple harmonic motion (conserved)
  - ⇒ The accelerated particles moves towards ~~some~~ fixed point direction. (linear) and return to its origin.
  - ⇒ $a \propto y$



$$\omega = \frac{d\theta}{dt} = \frac{\theta}{t}$$

$$\theta = \omega t$$

LOPA $\quad \sin\theta = y/A$

$$y = A\sin\theta = A\sin\omega t \quad \rightarrow (1)$$

- Velocity $= \frac{dy}{dt} = A\frac{d}{dt}\sin\omega t \Rightarrow$ Differ $\Rightarrow V = A\cos\omega t$
- $a = \frac{d}{dt}\left(\frac{dy}{dt}\right) \quad a = \frac{dv}{dt} \quad a = \frac{d^2y}{dt^2}$

$$a = \frac{d^2y}{dt^2} = -A\sin\omega t \Rightarrow \frac{d^2y}{dt^2} = -y$$