

Precise Concepts and formulae

(i) moment of inertia \rightarrow tendency of Body to remain at rest or at motion.

(ii) Friction \rightarrow oppose relative motion.

Static Kinetic (when slipping occur)

(When slipping isn't occurring)

(iii) Pseudo force \rightarrow applied in non-inertial frame to validate ~~newton~~ newton's law of motion.

$$F = m(-a) \quad \begin{array}{l} \text{in} \\ \text{of Body} \end{array} \begin{array}{l} \uparrow \\ \text{whose frame} \\ \text{we are looking} \\ \text{at.} \end{array}$$

(of main Body)

(IV) Centrifugal force $\rightarrow (-m\omega^2 r)$
 \rightarrow nothing But Pseudo force in circular motion.

(V) rolling without slipping $\rightarrow (v_{cm} = r\omega)$

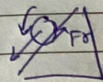
(VI) Precession \rightarrow when z changes the dir of \vec{L} continuously.

$$(VII) \quad \vec{z} = \vec{R} \times \vec{P} = \frac{d\vec{L}}{dt}$$

(VIII) Rolling of solid object from incline

$$v = (g \sin \theta - \frac{F_f}{m}) t$$

$$\omega = \omega_0 + \frac{(F_f \cdot r)}{I} t$$



Condition $\rightarrow v = r\omega$

formulae $a = \frac{g \sin \theta}{1 + \frac{K^2}{R^2}}$; where $I = mK^2$

$$a = \frac{mg \sin \theta}{m + \frac{I}{R^2}}$$

Amplitude

(IX) SHM: Oscillatory

