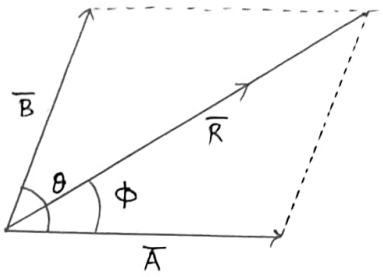
① 

$|\overline{R}| =$

$\tan\phi =$

② Eqn of Motion (1-D)

1st:

2nd:

3rd:

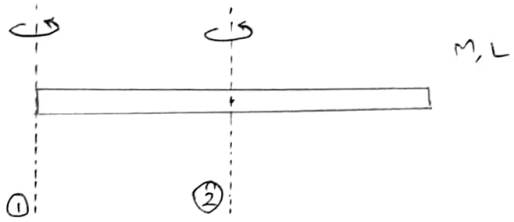
③ Distance covered in n^{th} second : (S_n)

$S_n =$

④ Instantaneous velocity

$v =$

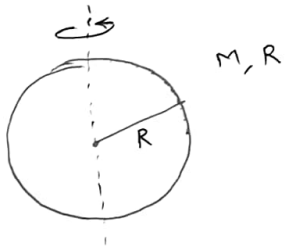
⑤ MOI of rod:



$I_1 =$

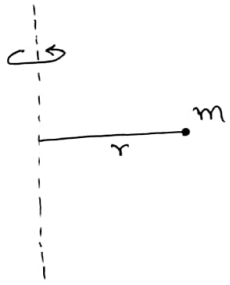
$I_2 =$

⑥ MOI of solid sphere:



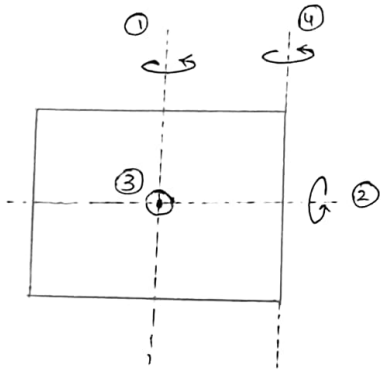
$I =$

⑦ MOI of a point mass:



$I =$

(8) MOI of square plate



$I_1 =$ $I_3 =$

$I_2 =$ $I_4 =$

(9) A ball is dropped from a height 'h':

a) Time taken to reach ground:

$t =$

b) Velocity of the ball on reaching ground: (v)

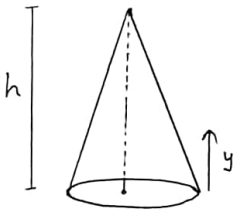
$v =$

(10) Relation b/w 'a' (accln) & 'x' (displacement)

$a =$

(11) Centre of Mass

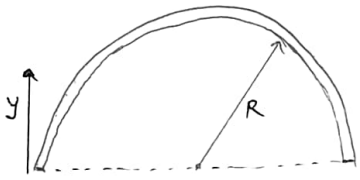
a) Cone



$y_{com} =$ (solid)

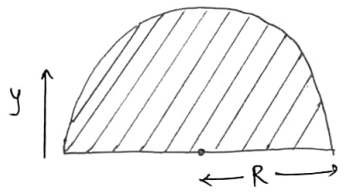
$y_{com} =$ (hollow)

b) ~~Semi~~ 2-D bodies



Ring

$y_{com} =$

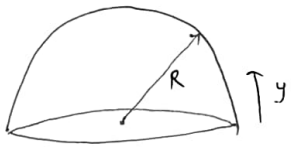


Disc

$y_{com} =$

c) 3-D bodies

Hemispherical shell:



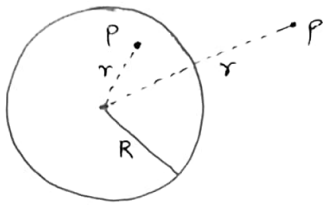
$y_{com} =$

Solid Hemisphere

(12) Gravitational Intensity (I)

a) Spherical Shell

(M, R)



I_p = $(r < R)$

I_p = $(r > R)$

(13) Circular Motion

a) Relation b/w $\vec{v}, \vec{\omega}, \vec{r}$

b) Centripetal Acceleration (a_c)

a_c =

c) Tangential acceleration (a_t)

a_t =

d) Total acceleration (a)

a =

(14) Equation of Trajectory (Projectile):

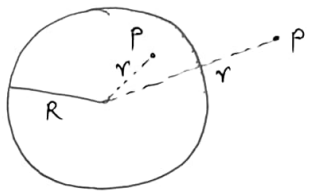
(15) Work Done (W)

W =

(16) Gravitational Field:

b) Solid Sphere

(M, R)



I_p = $(r < R)$

I_p = $(r > R)$

(17) Impulse (J)

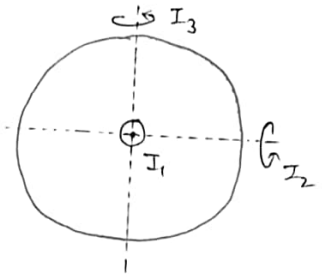
J =

(18) Impulse momentum Theorem:

(19) Escape velocity (V_{esc})

V_{esc} =

(20) MOI of disc



$I_1 =$ $I_2 =$

$I_3 =$

(21) Coefficient of Restitution (e)

Before collision:

After collision;

$e =$

(22) Bulk Modulus (B)

$B =$

(23) Variation in 'g'.

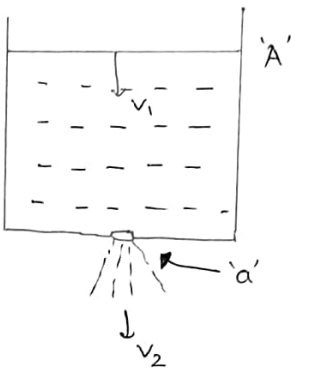
a) With height 'h'

$g' =$ $\approx$

b) With depth 'd'

$g' =$

(24) Equation of Continuity :



$\Rightarrow$

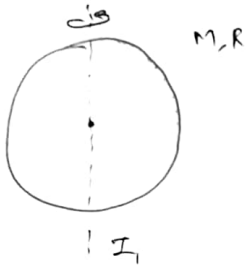
(25) Buoyant Force (F_B) :

$F_B =$

(26) Areal velocity (Keplar's 2nd law)

$\Rightarrow$

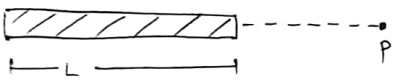
(27) MOI of shell



$I_1 =$

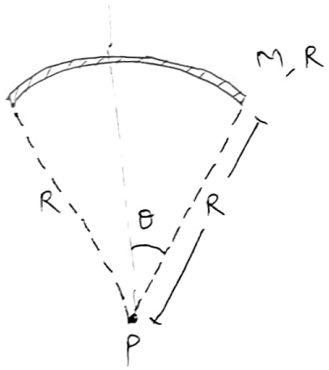
(28) Gravitational Intensity

→ Rod (M, L)



$I_p =$

→ Circular Arc



$I_p =$

(29) Relation b/w $\vec{\tau}$, $\vec{r}$ & $\vec{F}$

$|\vec{\tau}| =$

$\vec{\tau} =$ (vector form)

(30) Relation between T.E, P.E. and K.E.

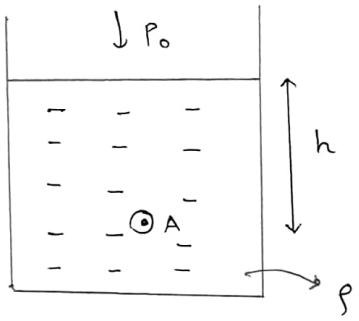
(31) 3 kinematic equation for Rotational Motion:

i)

ii)

iii)

(32) Pressure variation due to depth:

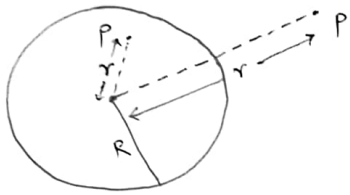


$P_A =$

(33) Bernoullis Theorem:

(34) Grav. Potential

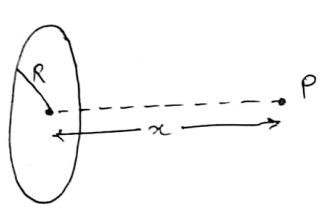
i) Solid sphere (M, R)



V_p = ($r \geq R$)

V_p = ($r < R$)

ii) On the axis of the ring

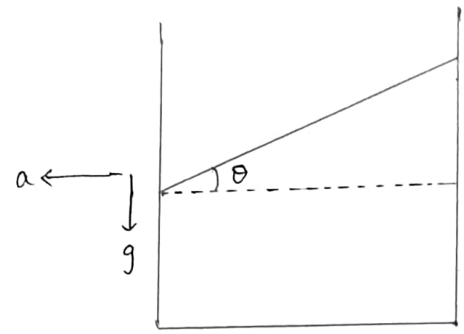


V_p =

(35) Relation b/w α, β, γ

(36) Work-Energy Theorem

(37) Angle made with the horizontal due to accln



$\tan\theta$ =

(38) Newtons law of Cooling:

(39) Youngs Modulus (Y)

Y =

(40) First law of Thermo-dynamics:

(41) $C_p - C_v$ =

(42) Pressure exerted due to gas molecules: (P)

P =

(43)

Type	f	C_p	C_v
mono			
di			
Tri (linear)			
Tri (Non-linear)			

(44) Relation b/w V_{rms}, V_{mp}, V_{avg}

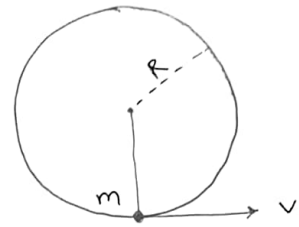
(45) Time period of physical pendulum:

$T =$

(46) Stefan's law:

(47) Relation b/w F (force) & U (PE):

(48) Circular Motion



For string, for complete circle

V_{min} (bottom) =

For rod, for complete circle

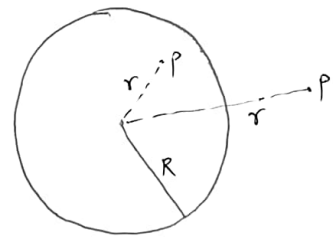
V_{min} (bottom) =

(49) Thrust force: (F_t)

(50) Work done in adiabatic Process: (W_{adia})

$W_{adia} =$

(51) Grav. Potential (shell):



$V_p =$ $(r < R)$

$V_p =$ $(r > R)$

(52) Rate of Heat flow

$\frac{dQ}{dt} =$

(53) velocity (v) of x relation in SHM

$v =$

(54) Work done in Isothermal Process.

$W_{isothermal} =$

(55) Terminal velocity (v_T) : (fluids)

$v_T =$

(56) Poisson's Ratio (μ)

$\mu =$

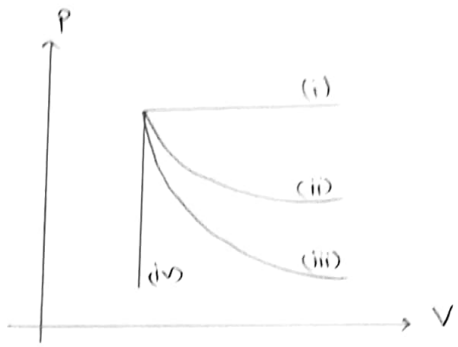
(57) Relation b/w τ, I & α

(58) Angular momentum ($\vec{L}$)

$\vec{L} =$ (for point mass)

$\vec{L} =$ (bodies)

(59) P-V graphs



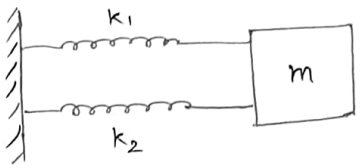
(i) →

(ii) →

(iii) →

(iv) →

(60) (SHM)



Time period for above system :

$T =$

(61) P.E in SHM (U) :

$U =$

(62) Torsional Pendulum

$T =$

(63) Weins Displacement Law

(64) Ideal Gas Equation

(65) v_{rms} =

v_{mp} =

v_{avg} =

(66) Efficiency (η) [Carnot Cycle]

η =

(67) Work done in Isochoric (Isometric) process:

W =

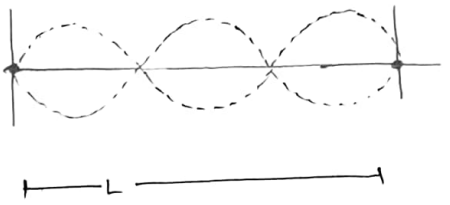
(68) Velocity of wave (v_{wave})

v_{wave} =

(69) Molar Heat Capacity (C)

C =

(70) string fixed at both ends:



f = (freq)

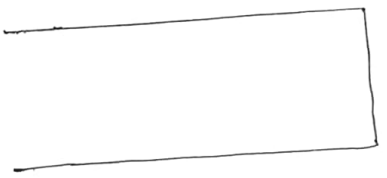
(71) phase Difference ($\Delta\phi$)

$\Delta\phi$ = (relation with x)

$\Delta\phi$ = (relation with t)

(72) Open organ Pipe

(Draw for 3rd Harmonic)



(73) a $\propto$ x relation for SHM

(74) Internal Energy (U)

$U =$

(75) Boltzman Constant (k)

$k =$ (formula)

(76) Energy corresponding to each degree of freedom

$E =$

(77) Time period for simple Pendulum :

$T =$

(78) Wave Number (K)

$K =$

(79) Doppler's effect

$V_{apparent} =$

(80) Intensity of a wave

$I =$

(81) Units :

a) Gravitational constant (G)

:

b) Universal Gas Constant (R)

:

c) Weens Constant (b)

:

d) Intensity (I)

: