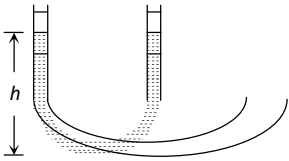
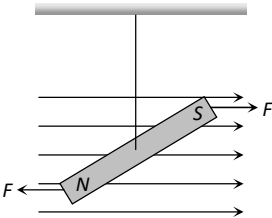
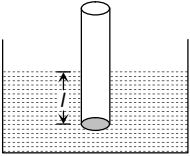
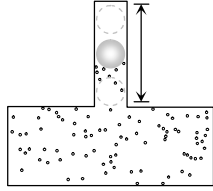


## Various Formulae of S.H.M.

<p>S.H.M. of a liquid in U tube</p> <p>If a liquid of density <math>\rho</math> contained in a vertical U tube performs S.H.M. in its two limbs. Then time period</p> $T = 2\pi\sqrt{\frac{L}{2g}} = 2\pi\sqrt{\frac{h}{g}}$ <p>where <math>L</math> = Total length of liquid column,  <math>h</math> = Height of undisturbed liquid in each limb (<math>L=2h</math>)</p>  	<p>S.H.M. of a bar magnet in a magnetic field</p> $T = 2\pi\sqrt{\frac{I}{MB}}$ <p><math>I</math> = Moment of inertia of magnet  <math>M</math> = Magnetic moment of magnet  <math>B</math> = Magnetic field intensity</p>
<p>S.H.M. of a floating cylinder</p> <p>If <math>l</math> is the length of cylinder dipping in liquid then time period</p> $T = 2\pi\sqrt{\frac{l}{g}}$  	<p>S.H.M. of ball in the neck of an air chamber</p> $T = \frac{2\pi}{A}\sqrt{\frac{mV}{E}}$ <p><math>m</math> = mass of the ball  <math>V</math> = volume of air- chamber  <math>A</math> = area of cross section of neck  <math>E</math> = Bulk modulus for Air</p>
<p>S.H.M. of a small ball rolling down in hemi-spherical bowl</p> $T = 2\pi\sqrt{\frac{R-r}{g}}$	<p>S.H.M. of a body suspended from a wire</p> $T = 2\pi\sqrt{\frac{mL}{YA}}$ <p><math>m</math> = mass of the body</p>

<p>R = radius of the bowl r = radius of the ball</p>	<p>L = length of the wire Y = young's modulus of wire A = area of cross section of wire</p>
<p>S.H.M. of a piston in a cylinder</p> $T = 2\pi\sqrt{\frac{Mh}{PA}}$ <p>M = mass of the piston A = area of cross section h = height of cylinder P = pressure in a cylinder</p>	<p>S.H.M of a cubical block</p> $T = 2\pi\sqrt{\frac{M}{\eta L}}$ <p>M = mass of the block L = length of side of cube <math>\eta</math> = modulus of rigidity</p>
<p>S.H.M. of a body in a tunnel dug along any chord of earth</p> $T = 2\pi\sqrt{\frac{R}{g}} = 84.6 \text{ minutes}$	<p>S.H.M. of body in the tunnel dug along the diameter of earth</p> $T = 2\pi\sqrt{\frac{R}{g}}$ <p>T = 84.6 minutes R = radius of the earth = 6400km g = acceleration due to gravity = 9.8m/s<sup>2</sup> at earth's surface</p>
<p>S.H.M. of a conical pendulum</p> $T = 2\pi\sqrt{\frac{L \cos \theta}{g}}$ <p>L = length of string <math>\theta</math> = angle of string from the vertical g = acceleration due to gravity</p>	<p>S.H.M. of L-C circuit</p> $T = 2\pi\sqrt{LC}$ <p>L = coefficient of self-inductance C = capacity of condenser</p>

