

## MOTION ( 1 D & 2 D )

Q 1) A ball is thrown vertically upwards with an initial speed  $u$  from a height  $h$  above the ground. The ball eventually hits the ground with a speed  $v$ . the acceleration due to gravity is  $g$  and the air resistance is negligible.

What is the average speed of the ball

And average velocity of the ball

over its entire trajectory?

a)  $\frac{u^2 + v^2}{2(u+v)}$

b)  $\frac{u+v}{2}$

c)  $\frac{gh}{u+v}$

d)  $\frac{gh}{2(u+v)}$

Q2) Time taken by an object falling from rest to cover the height of  $h_1$  and  $h_2$  is respectively  $t_1$  and  $t_2$ .

Then  $t_1 : t_2$

∴

( Hint: drag and drop )

$h_1$

$h_2$

$\sqrt{h_2}$

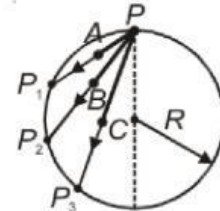
$2 h_1$

$2h_2$

$\sqrt{h_1}$

Q3) There are three smooth wires PP<sub>1</sub>, PP<sub>2</sub> and PP<sub>3</sub> tightly stretched on a vertically fixed ring of radius  $R$ . three beads A,B and C are free to slide on these wires. If the beads start from the point P, to reach P<sub>1</sub>,P<sub>2</sub> and P<sub>3</sub> along the three paths.

Click on the right statements



- ☐ a) Average speed of the beads are equal.
- ☐ b) They reach their respective destinations in equal time.
- ☐ c) The final velocities are directly proportion to cosine angle with the vertical.
- ☐ d) Acceleration of beads are identical in magnitude.

Q4) A bird flies for 4s with a velocity of  $(t-2)$  m/s in a straight line, where  $t$ = time in seconds. It covers a distance of

2 m       4 m       6 m       8 m