MOTION (1 D & 2 D) WORKSHEET - 3

Q1) A hill is 500 m high. Supplies are to be sent across the hill using a canon that can hurl packets at a speed of 125 m/s over the hill. The canon is located at a distance of 800m from the foot of hill and can be moved on the ground at a speed of 2 m/s; so that its distance from the hill can be adjusted. What is the shortest time in which a packet can reach on the ground across the hill? Take g =10 m/s^2.

Sol:

$u_y = \sqrt{2gh} \geq$ [ ] m/s

u = 125m/s

then u_x = [ ] m/s

time taken by the packet to reach the top of the hill, t = [ ] s

time taken to reach the ground on the other side of the hill is [ ] s

horizontal distance travelled during entire flight is [ ] m.

so the distance between canon and hill is [ ] m

the distance for which canon needs to move before hurl packets [ ] m

time taken for the canon to move on ground [ ] s

so the total time taken by the packet [ ] s

Drag and Drop:

100 75 10 800 750 10 50 60 25 45 450

Q2) If $|\vec{A}|$ =2 and $|\vec{B}|$ =4 , then match the relations in column I with the angle θ between A and B in column II.

Column I		column II	
A.B = 0			θ=0^0
A.B = 8			θ=90^0
A.B = 4			θ = 180^0
A.B = -8			θ = 60^0

Q 3) Q2) If $|\vec{A}|$ =2 and $|\vec{B}|$ =4 , then match the relations in column I with the angle θ between A and B in column II.

Column I		column II	
AXB = 0			θ=30^0
AXB = 8			θ=45^0
AXB = 4			θ = 0^0
AXB = 4√2			θ =90^0

References : NCERT