# MAY JUNE 2017

b) A ball is thrown in the air with velocity of 4 m/sec. at an angle of $30°$ with the [6] horizontal. Determine maximum height reached and range. State condition for maximum range and find maximum range.

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b) Determine the speed at which the basket ball at 'A' must be thrown at an angle of $30°$ so that 06 if makes it to the basket at B. Also find at what speed it passes through the hoop.
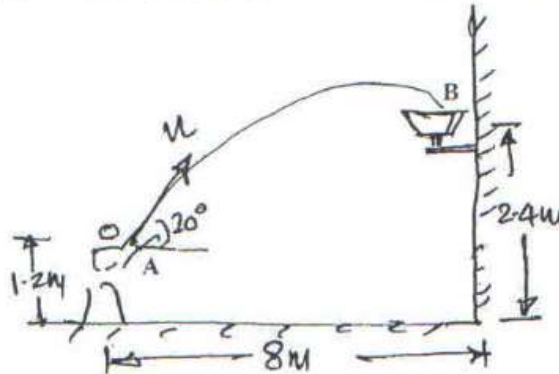
DEC 2016

(b) A particle is projected with velocity u at an angle of elevation 600 with [6] horizontal. It reaches to the height of 5 m in 2 sec. determine velocity u and the range.

DEC 2016

b. A shot is fired with a bullet with an initial velocity of 20m/s from a point 10m infront of a vertical wall 5m high. Find the angle of projection with the horizontal to enable the shot to just clear the wall. Also find the range of shot where the bullet falls on the ground. [6]

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b. A fighter Plane Moving horizontally with a constant velocity of 200 m/seconds releases [6] a bomb from an altitude of 400 m. Find the velocity and direction of the bomb just before it strikes the ground. Also determine the distance travelled by the plane before the bomb just strikes the ground.

b   A stone is thrown with a velocity (u) m/sec at an angle of 20^0 with horizontal from a   [4]
point 2 m above the ground. The stone strikes the ground 5 m away from the original
position. The motion of stone is subjected to gravitational acceleration & wind
resistance of 0.82 m/sec^2, opposing the horizontal motion. Determine the time of flight
of the stone.

DEC 2015

b) An object is projected so that it just clears two obstacles each of 7.5 m height,
which are situated 50 m from each other. If the time of passing between the
obstacles is 2.5 s, calculate the complete range of projection and the initial velocity
of the projectile.   [6]
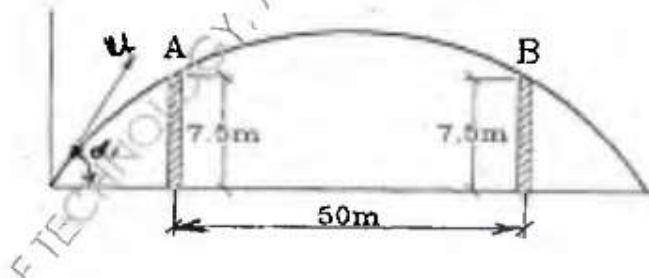
MAY 2015

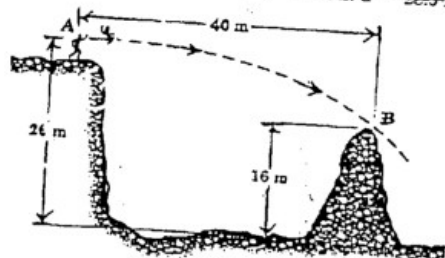c) With what minimum horizontal velocity (u) can a boy throw a rock at A & have it just clear the   4
obstruction at B? Refer fig. 14.

Fig. 14

b. A particle is projected from the top of a tower of height 50 m with a velocity [6] of 20 m/sec at an angle 30 degrees to the horizontal. Determine :
   1) Horizontal distance AB it travel from the foot of the tower.
   2) The velocity with which it strikes the ground at B.
   3) Total time taken to reach point B.
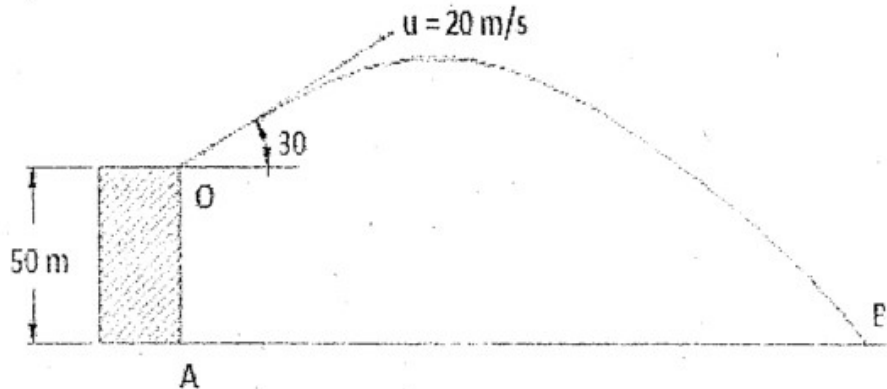
b) A gunman fires a bullet with a velocity of 100m/s, 50° upwards from the top of a hill 300m high to hit a bird. The bullet misses its target and finally lands on the ground. Calculate (a) the maximum height reached by the bullet above the ground (b) total time of flight (c) velocity with which the bullet hits the ground. [6]

(b) A ball is thrown from horizontal level, such that it clears a wall 6 m [06] high, situated at a horizontal distance of 35 m. If the angle of projection is 60^0 with respect to the horizontal, what should be the minimum velocity of projection?

DEC 2012

b) A ball thrown with speed of 12 m/s at an angle of 60° with a building strikes the ground 11.3 m horizontally from the foot of the building as shown. Determine the height of the building [06].
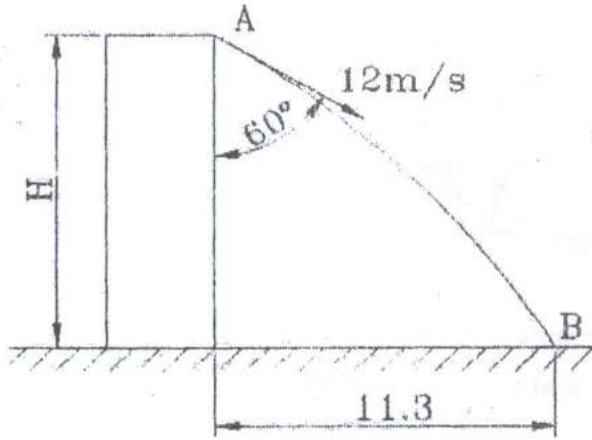
DEC 2010

6A). An aeroplane is flying in horizontal direction with a velocity of 540km/hr and at a height of 2200m. When it is vertically above the point A on the ground, a body is dropped from it. The body strikes the ground at point B. Calculate the distance AB (ignore air resistance). Also find velocity at B and time taken to reach B.

(08 marks)
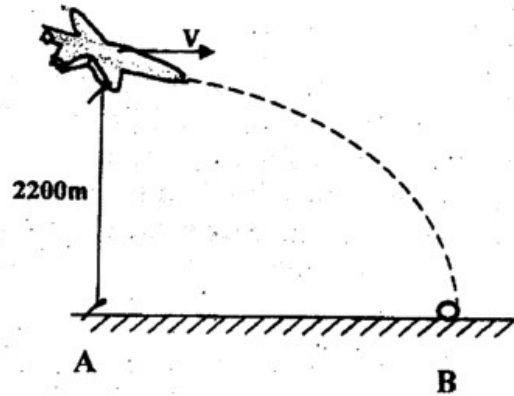
MAY JUN2010

(d) By what percentage the range of projectile is increased if initial velocity is increased by 5% ?   5