Daily Question – Applied Mathematics - Day 11

Topic: Projectiles

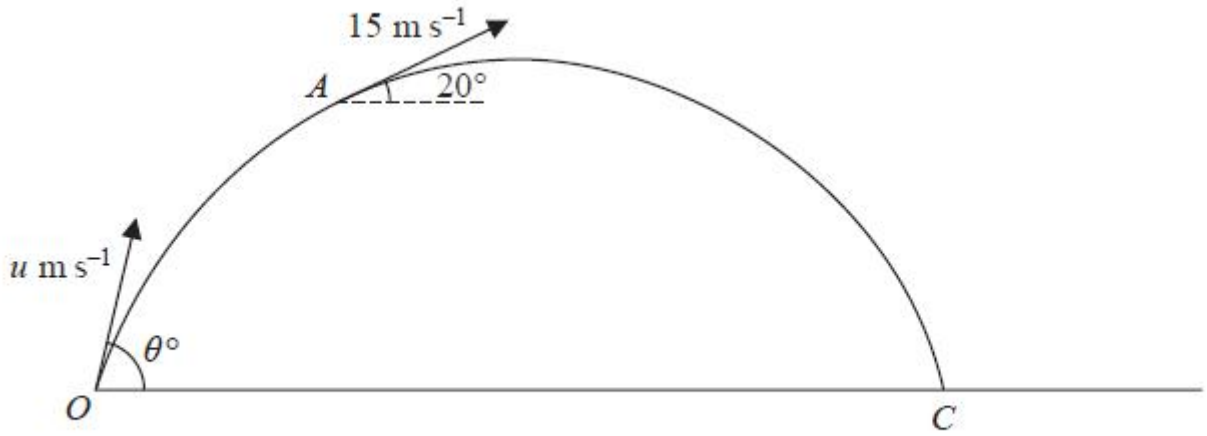

Figure 3

At time $t = 0$, a particle is projected from a fixed point O on horizontal ground with speed u m s^{-1} at an angle $\theta°$ to the horizontal. The particle moves freely under gravity and passes through the point A when $t = 4$ s. As it passes through A, the particle is moving upwards at 20° to the horizontal with speed 15 m s^{-1}, as shown in Figure 3.

(a) Find the value of u and the value of θ.

(7)

At the point B on its path the particle is moving downwards at 20° to the horizontal with speed 15 m s^{-1}.

(b) Find the time taken for the particle to move from A to B.

(2)

The particle reaches the ground at the point C.

(c) Find the distance OC.

(3)

(Total for question = 12 marks)