Constant Acceleration : Horizontal Motion - Edexcel Past Exam Questions

1. Two cars A and B are moving in the same direction along a straight horizontal road. At time $t = 0$, they are side by side, passing a point O on the road. Car A travels at a constant speed of 30 m s^{-1}. Car B passes O with a speed of 20 m s^{-1}, and has constant acceleration of 4 m s^{-2}. Find

    (a) the speed of B when it has travelled 78 m from O,   **(2)**

    (b) the distance from O of A when B is 78 m from O,   **(4)**

    (c) the time when B overtakes A.   **(5)**
                                                                            Nov 04 Q6

2. A stone S is sliding on ice. The stone is moving along a straight line ABC, where $AB = 24$ m and $AC = 30$ m. The stone is subject to a constant resistance to motion of magnitude 0.3 N. At A the speed of S is 20 m s^{-1}, and at B the speed of S is 16 m s^{-1}. Calculate

    (*a*) the deceleration of S,   **(2)**

    (*b*) the speed of S at C.   **(3)**
                                                                            Jan 05 Q6

3. In taking off, an aircraft moves on a straight runway AB of length 1.2 km. The aircraft moves from A with initial speed 2 m s^{-1}. It moves with constant acceleration and 20 s later it leaves the runway at C with speed 74 m s^{-1}. Find

    (*a*) the acceleration of the aircraft,   **(2)**

    (*b*) the distance BC.   **(4)**
                                                                            June 05 Q1

4. A train moves along a straight track with constant acceleration. Three telegraph poles are set at equal intervals beside the track at points A, B and C, where $AB = 50$ m and $BC = 50$ m. The front of the train passes A with speed 22.5 m s^{-1}, and 2 s later it passes B. Find

    (*a*) the acceleration of the train,   **(3)**

    (*b*) the speed of the front of the train when it passes C,   **(3)**

    (*c*) the time that elapses from the instant the front of the train passes B to the instant it passes C.   **(4)**
                                                                            June 06 Q3

5. Three posts *P*, *Q* and *R*, are fixed in that order at the side of a straight horizontal road. The distance from *P* to *Q* is 45 m and the distance from *Q* to *R* is 120 m. A car is moving along the road with constant acceleration a m s^{-2}. The speed of the car, as it passes *P*, is u m s^{-1}. The car passes *Q* two seconds after passing *P*, and the car passes *R* four seconds after passing *Q*.

Find

(i)   the value of *u*,

(ii) the value of *a*.

(7)
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