Cambridge International AS & A Level

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Mathematics

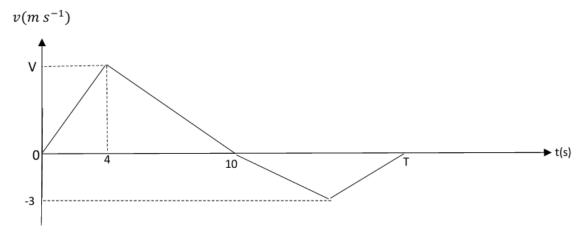
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Paper 4 Mechanics

October/November 2024

Question No(1)

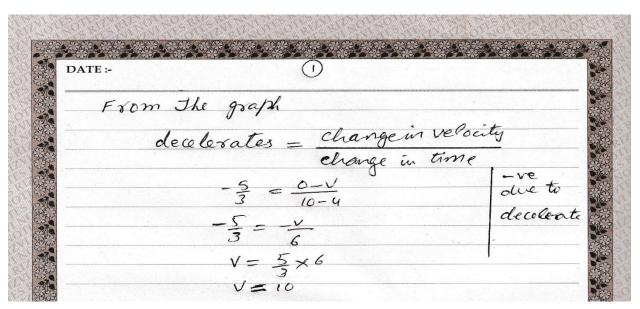
## Question No (1)



The velocity of a particle moving in a straight line at time t seconds after leaving a fixed point O is v m  $s^{-1}$ . The diagram shows a velocity-time graph which models the motion of the particle from t =0 to t= T. The graph consists of four straight line segments. The particle accelerates from rest to a speed of V m $s^{-1}$  over a period of 4 s, and then decelerates at  $\frac{5}{3}$  m  $s^{-2}$  to instantaneous rest over a period of 6 s. The particle then travels back towards O, reaching a maximum speed of 3 m  $s^{-1}$  before coming to rest at time t = T.

- (a) Find the value of V.
- (b) Given that the total distance travelled by the particle from t = 0 to t = T is 68 m, find the value of T.

## Solution: (a)



(b)

