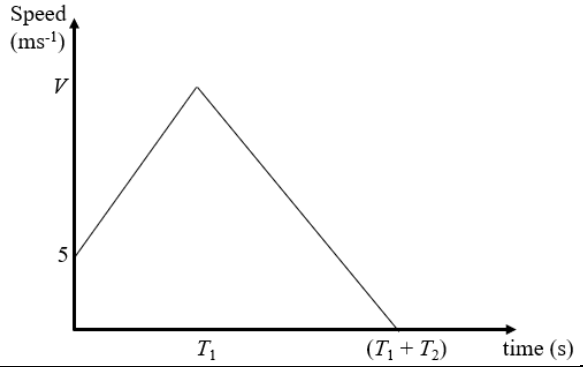
QUESTION NUMBER	SCHEME	MARKS
2(a)		B1 shape B1 time labels B1 speed labels
		(3)
2(b)(i)	$132 = \frac{(5+V)T_1}{2}$ **OR** $132 = 5T_1 + \frac{1}{2}T_1(V-5)$	M1
	$T_1 = \frac{264}{5+V}$ oe	A1
2(b)(ii)	$136 = \frac{VT_2}{2}$	M1
	$T_2 = \frac{272}{V}$ oe	A1
		(4)
2(c)	$\frac{264}{5+V} + \frac{272}{V} = 28$	M1
	$(28V^2 - 396V - 1360 = 0$ **OR** $7V^2 - 99V - 340 = 0)$	
	$V = 17$ only	A1
		(2)
2(d)	Deceleration = $\frac{\text{their } V}{\text{their } T_2}$ **OR** $\frac{(\text{their } V)^2}{272}$	M1
	$\frac{17}{16}$ oe $= 1.0625$ Accept 1.1 or better (m s^{-2})	A1
		(2)
		(11)
	Notes for Question 2	
	N.B. If you think a candidate has misread the question and consistently uses T_2 as the time from A to C, send to Review.	
	Allow use of t_1 and t_2 instead of T_1 and T_2 throughout.	
2(a)		
B1	Correct graph shape. Must start on the vertical axis and not at the origin and finish on the t-axis. B0 if they have any extra **continuous** lines.	
B1	Correct time labels. Accept delineators (B0 if delineators missing)	

B1	Correct speed labels.	
2(b)(i)		
M1	Complete method using 132 to form an equation in V and T_1. May use area or *suvat* equation(s). **N.B**. M0 for $132 = \frac{(5+5+V)T_1}{2}$	
A1	Correct expression for T_1.	
2(b)(ii)		
M1	Complete method using 136 to form an equation in V and T_2. May use area or *suvat* equation(s). **N.B.** Allow a correct method based on their graph IF IT HELPS THE CANDIDATE, but must produce an equation in V and T_2 **only.** **e.g.** $136 = \frac{1}{2}V(T_2 - T_1)$ **with T_1 then replaced in terms of V**	
A1	Correct expression for T_2.	
2(c)		
M1	Use 28 and **sums** their expressions for T_1 and T_2 to form an equation in V only. **N.B.** Allow a restart for either T_1 or T_2 or both.	
A1	Correct answer for V. If seen, a negative value ($\frac{-20}{7}$) should be rejected.	
2(d)		
M1	Use their V and their T_2 (or their V in the alternative) to find an **expression** for the deceleration (allow minus sign).	
A1	Correct deceleration must be positive. 1.1 or better. The exact answer is $\frac{17}{16}$, 1.0625.	