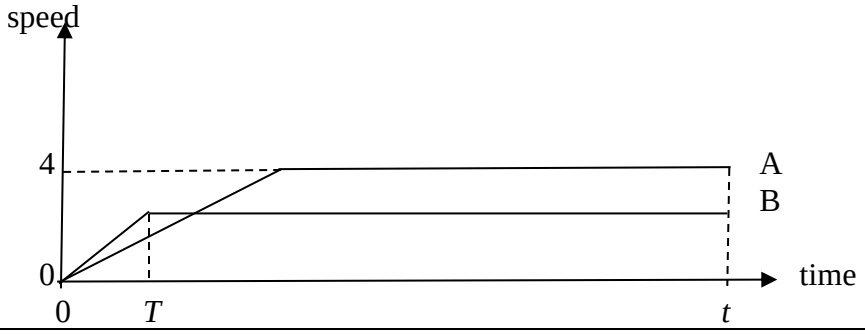
Question Number	Scheme	Marks
7(a)		B1 for A B1 for B B1 4 & *T* Allow their numerical value of *T* (3)
7(b)	$\frac{4}{0.8} = 5$ (s)	B1
	$100 = \frac{(t + t - 5)}{2} \times 4$ **OR** $100 = \frac{1}{2} \times 5 \times 4 + 4(t - 5)$	M1A1ft
	$t = 27.5$ (s)	A1
		(4)
7(c)	$100 = \frac{(27.5 + 27.5 - T)}{2} \times T$ **OR** $100 = \frac{1}{2} \times T \times T + T(27.5 - T)$	M1A1ft
	$T^2 - 55T + 200 = 0$ oe	A1
	$T = 3.915047\ldots$ accept 3.9 or better	A1
		(4)
7(d)	$4 - 3.915..$	M1
	0.085 or better $(\mathrm{m\,s^{-1}})$	A1**ft**
		(2)
		(13)
	Notes for question 7	
7(a)	B1 Correct shape for A's graph.	
	B1 Correct shape for B's graph with steeper gradient initially and must cross A's graph. <u>Both graphs must end at the same time</u>. B0 once if solid vertical line at the end	
	B1 4 and *T* correctly marked. Allow appropriate delineators. **N.B.** If graphs are on separate axes can score max B1B0B1 If no labels, give BOD. If incorrect labels, max B1B0B1	
7(b)	B1 5 (s) seen – could be on graph	
	M1 Attempt at equation in *t only*, with correct structure i.e. trapezium or (rectangle + triangle) or (rectangle – triangle) oe including $\frac{1}{2}$ where appropriate, based on total area (OR distance using 2 or more *suvat* formulae) being 100 M0 for a *single suvat* equation for the *whole* motion. **N.B.** If they clearly use *T* (for *t*) in their equation and **in their answer**, it's M0 but give BOD where possible.	
	A1ft Correct equation in *t* only, ft on their 5	
	A1 cao	
7(c)	M1 Attempt at equation in *T only*, with correct structure, i.e. trapezium or (rectangle + triangle) or (rectangle – triangle) oe based on total area (OR distance using 2 or more *suvat* formulae) being 100 M0 for a *single suvat* equation for the *whole* motion.	

	A1ft Correct equation in T only, ft on their 27.5	
	A1 Correct 3 term quadratic	
	A1 cao	
7(d)	M1 for $4-T$. (Allow $T-4$)	
	A1 **ft** follow through on their T value provided it's < 4. Must be correct to at least **2 SF**.	