Question			Answer	Marks	AO	Guidance	
11	(a)		$0\ (\text{m s}^{-2})$	**B1** **[1]**	**1.2**		
11	(b)		**DR** $v = t\left(-t^2 + 11t - 24\right)$ $\Rightarrow v = -t^3 + 11t^2 - 24t$	**B1**	**1.1**	Expand and simplify v correctly	
			$\frac{\mathrm{d}v}{\mathrm{d}t} = -3t^2 + 22t - 24$	**M1**	**3.4**	Differentiate their cubic expression for v correctly	
			$3t^2 - 22t + 24 = 0$	**M1**	**1.1**	Sets their three-term quadratic in t equal to zero	
			$(3t - 4)(t - 6) = 0$	**M1**	**1.1**	Factorises (oe) their three-term quadratic in t	Condone this factorisation for $-3t^2 + 22t - 24 = 0$
			From sketch $T > 3$ therefore $T = 6$	**A1** **[5]**	**2.3**	Correct value of T with reason for why $T \neq \frac{4}{3}$	Any working used to determine the required value of T must be accurate
11	(c)		$\int_0^3 v\mathrm{d}t$ and $\int_3^T v\mathrm{d}t$	**M1**	**3.1b**	Need to see attempt at integrals but may be **BC**	Where v is a cubic expression
			$(-)\frac{117}{4}$ and $\frac{261}{4}$	**A1**	**1.1**		
			Total distance $= \frac{117}{4} + \frac{261}{4} = 94.5\,(\text{m})$	**A1** **[3]**	**1.1**	cao	