Question Number	Scheme	Marks
3 (a)(i)	3 + [0] + 29 = 32*	B1*
(ii)	3 + 15 + 29 = 47*	B1*
		(2)
(b)	$f(t) = \begin{cases} \frac{1}{15} & 32 \leqslant t \leqslant 47 \\ 0 & \text{otherwise} \end{cases}$	M1 A1
		(2)
(c) (i)	[E(T) =] 39.5 oe	B1
(ii)	$[\text{Var}(T) =] \frac{(47-32)^2}{12}$	M1
	$\frac{75}{4} = 18.75$	A1
		(3)
(d)	$(40-32) \times \frac{1}{15}$	M1
	$= \frac{8}{15}$	A1
		(2)
	Notes	**Total 9**

(a)(i)	**B1***	For 3 + [0] + 29
(ii)	**B1***	For 3 + 15 + 29 Allow 32 + 15
(b)	**M1**	For $f(t) = \frac{1}{15}$ $32 \leqslant t \leqslant 47$ Allow use of < instead of one/both $\leq$ signs. Allow the use of any letter for f(t) and t (Condone inconsistent use of letters) but we must have f(t) and an inequality
	A1	Fully correct pdf $f(t) = \begin{cases} \frac{1}{15} & 32 \leqslant t \leqslant 42 \\ 0 & \text{otherwise} \end{cases}$ Must be f(t) and t. Condone f(T) and T Allow use of < instead of one/both $\leq$ signs Allow equivalent for the 0 otherwise.
(c)(i)	**B1**	For 39.5 oe
(ii)	**M1**	For use of $\text{Var}(T) = \frac{(\beta-\alpha)^2}{12}$
	A1	For 18.75 oe
(d)	**M1**	For use of $(40-\alpha) \times \frac{1}{\beta-\alpha}$
	A1	For $\frac{8}{15}$ oe Allow awrt 0.533