Question Number	Scheme	Marks
2(a)	$\mathrm{f}(w)=\begin{cases}\frac{1}{8} & -1.4<w<6.6\\ 0 & \text{otherwise}\end{cases}$	M1 A1
		(2)
(b)	$\mathrm{E}(W)=2.6$ oe	B1
		(1)
(c)	$(1.6-\alpha)\times"\frac{1}{8}"=0.35$	M1
	$\alpha=-1.2$ oe	A1cso
		(2)
(d)	$\mathrm{P}(1.2<W<2.4)=(2.4-1.2)\times"\frac{1}{8}"$	M1
	$=\frac{3}{20}$ or 0.15 oe	A1ft
		(2)
(e)	$\mathrm{P}(W>2 \mid 1.2<W<2.4)=\frac{0.4\times"1/8"}{"0.15"}$	M1
	$=\frac{1}{3}$ awrt 0.333	A1
		(2)
(f)	The random variable Y is the number of days the train is between 1.2 minutes and 2.4 minutes late $Y\sim \mathrm{B}(40,"0.15")$	M1
	$\mathrm{P}(Y\geq 10)=1-\mathrm{P}(Y\leq 9)$ or $1-0.9328$	M1
	$=0.0672$ awrt 0.0672	A1 (3)

		Notes	Total 12
2(a)	**M1**	pdf of the form $[\mathrm{f}(w)=]\begin{cases}p & -1.4<w<6.6\\ 0 & \text{otherwise}\end{cases}$	where p is a probability allow use of $\leq$ instead of one/both < signs. Allow equivalent for the 0 otherwise. Allow any letter/mix of letters
	A1	Fully correct allow use of $\leq$ instead of one/both < signs. Allow any letter but must be consistent.	
(b)	**B1**	2.6 oe	
(c)	**M1**	setting up equation $(1.6-\alpha)\times"\text{their } p"=0.35$ with $0<p<1$ or $\frac{7}{20}=\frac{2.8}{8}$ and $\alpha=1.6-"2.8"$ or F(1.6) – F(α) = 0.35 using their F(w) in the form $bw+c$ where $0<b<1$ Allow for $\int_{\alpha}^{1.6}"\text{their f}(w)"\mathrm{d}w=0.35$ oe with an attempt to integrate (at least one term correct).	
	A1 cso	If using F(1.6) – F(α) = 0.35 then F(w) must be correct. Allow different letters	
(d)	**M1**	$(2.4-1.2)\times"\text{their } p"$ where "their $\frac{1}{8}$" is a probability or F(2.4) – F(1.2) using their F(w) in the form $bw+c$ where $0<b<1$ Implied by 0.15 Allow for $\int_{1.2}^{2.4}"\text{their f}(w)"\mathrm{d}w$ with an attempt to integrate (at least one term correct).	
	A1ft	Ft their p as long as the answer is a probability	
(e)	**M1**	$\frac{0.4\times"\text{their } 1/8"}{"\text{their (d)}"}$ or $\frac{0.4}{"1.2"}$ implied by $\frac{1}{3}$ Allow for $\int_{2}^{2.4}"\text{their f}(w)"\mathrm{d}w$ with an attempt to integrate (at least one term correct) for numerator	
	A1	Allow $0.\dot{3}$ or $0.3\dot{3}$	
(f)	**M1**	Writing or using B(40, " their 0.15") Implied by mean of $40\times"\text{their (d)}"$	
	M1	Writing or using $1-\mathrm{P}(Y\leq 9)$ Allow for $1-\mathrm{P}\left(z\leqslant\frac{9.5 \text{ or } 9-"\text{their mean}"}{"\text{their sd}"}\right)$	
	A1	awrt 0.0672	