Question Number	Scheme	Marks
6 (a)	$\mathrm{P}(B\|A)=\dfrac{\mathrm{P}(B\cap A)}{\mathrm{P}(A)}$	
	$0.3=\dfrac{\mathrm{P}(B\cap A)}{x}\Rightarrow \mathrm{P}(B\cap A)=0.3x$	M1
	$\mathrm{P}(A\cup B)=\mathrm{P}(A)+\mathrm{P}(B)-\text{'}\mathrm{P}(A\cap B)\text{'}$	M1
	$0.65=x+y-0.3x\Rightarrow 0.65=0.7x+y$	
	$14x+20y=13$*	A1*
		(3)
(b)(i)	$\mathrm{P}(B\cup C)=\mathrm{P}(B)+\mathrm{P}(C)$ or $\mathrm{P}(B\cap C)=0$	M1
	$0.85=\dfrac{1}{2}x+2y$	A1
(ii)	Attempt to solve the 2 equations simultaneously	M1
	$x=0.5$ $y=0.3$	A1
		(4)
(c)	$\mathrm{P}(B\|A)=0.3$ **and** $\mathrm{P}(B)=\text{'}0.3\text{'}$ / $\mathrm{P}(A)\times\mathrm{P}(B)=\text{'}0.5\text{'}\times\text{'}0.3\text{'}$ **and** $\mathrm{P}(A\cap B)=0.3\times\text{'}0.5\text{'}$ or $\mathrm{P}(A\cap B)=$ '0.5' + '0.3' – 0.65	M1
	So, A and B are statistically independent	A1ft
		(2)
	Notes	**Total 9**

(a)	**M1**	Use of $\mathrm{P}(B\|A)=\dfrac{\mathrm{P}(B\cap A)}{\mathrm{P}(A)}$ assuming independence is M0 e.g. $\mathrm{P}(B\cap A)=\mathrm{P}(B)\times\mathrm{P}(A)[=xy]$ May be implied by $\mathrm{P}(B\cap A)=0.3x$ (may be seen on a Venn diagram)
	M1	Use of $\mathrm{P}(A\cup B)=\mathrm{P}(A)+\mathrm{P}(B)-\mathrm{P}(A\cap B)$ with substitution of $\mathrm{P}(A\cup B)$, $\mathrm{P}(A)$ and $\mathrm{P}(B)$ (the equation may be seen in a Venn diagram) $0.65=x+y-0.3x$ implies M1M1
	A1*	Answer is given so no incorrect working can be seen
(b)(i)	**M1**	Use of $\mathrm{P}(B\cup C)=\mathrm{P}(B)+\mathrm{P}(C)$ or sight of $\mathrm{P}(B\cap C)=0$
	A1	Any correct second equation in x and y which need not be simplified.
(ii)	**M1**	Attempt to solve the 2 equations simultaneously. Either a correct substitution seen or a correct method to eliminate x or y
	A1	For $x=0.5$ and $y=0.3$
(c)	**M1**	For finding all of the probabilities needed for a test for independence (probabilities must be labelled) ft their values of x and y $\mathrm{P}(B\|A)$ **and** $\mathrm{P}(B)$ or $\mathrm{P}(A)$, $\mathrm{P}(B)$ **and** $\mathrm{P}(A\cap B)$ For $\mathrm{P}(A\cap B)$ we **must** see working shown
	A1ft	For a correct ft conclusion for their values of x and y (must have scored M1)