Question Number	Scheme	Marks
6. (a)(i)	[P(A) =] **0.25**	B1
(ii)	$[\mathrm{P}(A \mid B) =]$ **1**	B1
(iii)	$[\mathrm{P}(A \mid C) =]$ **0**	B1
		(3)
(b)	$\frac{q}{q+r} = \frac{3}{5}$	M1
	$0.13 + p + s = \frac{7}{10}$	M1
	$p + q + r + s + 0.12 + 0.13 = 1$	M1
	Solving simultaneously to get	
	$\frac{q}{0.3-0.12} = \frac{3}{5}$ **or** $0.3 = 0.12 + 1.5r + r$ **or** $0.3 = 0.12 + q + \frac{2}{3}q$ oe	dM1
	q = **0.108**	A1
	r = **0.072**	A1
		(6)
(c)	$\frac{5}{8} = 0.13 + 0.12 + \text{'}0.072\text{'} + s$ oe	M1
	s = **0.303**	A1
		(2)
	Notes	**Total 11**

(a)(i) B1 0.25 oe

(ii) B1 1 cao

(iii) B1 0 cao

(b) 1st M1 correct expression for $\mathrm{P}(C \mid D) = \frac{3}{5}$. Allow P($D$) for $q + r$

2nd M1 correct expression for $\mathrm{P}(B' \cap D') = \frac{7}{10}$

3rd M1 A correct equation or use of sum of probabilities = 1 **must** imply correct equation eg may ft their

$\mathrm{P}(B' \cap D') = \frac{7}{10}$ Implied by $q + r = 0.18$

or P(D) = 0.18

NB $\frac{3}{10} = 0.12 + q + r$ is 2ndM1 3rdM1

4th dM1 (dep on all 3 previous M1 being awarded) solving to obtain a correct equation in a single variable. Implied by a correct value for q or r

1st A1 q = 0.108 or $\frac{27}{250}$ oe

2nd A1 r = 0.072 or $\frac{9}{125}$ oe

(c) M1 correct expression for $\mathrm{P}(B \cup C') = \frac{5}{8}$ ft their value for r. Allow use of the letter r

eg $\frac{5}{8} = 0.13 + 0.12 + r + s$ oe We will condone values of r outside the range $0 < r < 1$

A1 s = 0.303 oe