Qu 6	Scheme	Marks	AO
(a)	A, C <u>or</u> A, D <u>or</u> B, D [Allow things like $A \cap D$]	B1 **(1)**	1.2
(b)	$P(C) = 0.6$ <u>and</u> $P(B) = p + 0.32$ <u>and</u> $P(B \cap C) = 0.27$ <u>or</u> $(0.08 + 0.25 + 0.27) \times (0.27 + 0.05 + p) = 0.27$ <u>or</u> $0.27 + 0.05 + p = \frac{0.27}{0.6} = 0.45$	M1	1.1b
	$[p + 0.32 = 0.45$ so$]$ $p = $ **0.13**	A1 **(2)**	2.2a
(c)	$\left[P(A \mid B') \right] = \dfrac{q}{q + r + 0.25 + 0.08}$ <u>or</u> $\dfrac{q}{1 - (0.05 + "0.13" + 0.27)}$ <u>or</u> $\dfrac{q}{0.55}$	M1	2.1
	$q + r = 1 - 0.65 - "0.13"$ $[= 0.22]$	M1	1.1b
	Since $r \geqslant 0$ the greatest value of q is "0.22" so $P(A \mid B') \leqslant$ **0.4** or $\underline{\frac{2}{5}}$	A1 **(3)**	2.2a
(d)	$\left[P(B \mid A') = \right] \dfrac{0.27 + "0.13"}{0.6 + "0.13" + r} = 0.5$ or $\dfrac{0.27 + "0.13"}{1 - (q + 0.05)} = 0.5$	M1	1.1b
	$r = $ **0.07** , $q = $ **0.15**	A1 A1ft **(3)**	1.1b 1.1b
(e)	$\left[P\left([A \cup B]' \cap C \right) = \right] [0.25 + 0.08] = $ **0.33**	B1 **(1)**	1.1b
(f)	e.g. $B \cap [A \cup C]'$ <u>or</u> $B \cap A' \cap C'$ <u>or</u> $(B \cap A') \cap (B \cap C')$ o.e.	B1 **(1)**	1.1b
		(11 marks)	
	Notes		
(a)	B1 for a correct pair. If more than one pair is given then all must be correct. $P(A)$ and $P(C)$ etc is B0 $P(A \cap C) = 0$ is B0 **but** condone things like $A \cap C = \varnothing$		
	In parts (b) – (d) we will condone poor notation and mark equations/expressions		
(b)	M1 for all relevant labelled probabilities listed <u>or</u> a correct equation/expression for p		
	A1 for $p = 0.13$		
	In parts (c) and (d) they can use letter p or we ft their value for p provided a probability		
(c)	1st M1 for a correct method for $P(A \mid B')$ in q (and r) ft their p. May be done in stages e.g. find correct expression for $P(B')$, simplify incorrectly then use q over this		
	2nd M1 for a correct equation for $q + r$ (o.e.)(ft their p) Can accept $r = 0$ and $q = 0.22$ **NB** sight of $\frac{0.22}{0.55}$ will score M1M1		
	A1 for 0.4 i.e. deducing the maximum value of $P(A \mid B')$. Allow $\leqslant 0.4$ or $P(A \mid B') = 0.4$ Can award 3/3 for $P(A \mid B') = 0.4$ but not 0.4 alone as it can come from e.g $P(C')$		

(d)	M1 for a correct equation for r (or q) only can have p or ft their value for p.
	      May be in stages
	      e.g. find $P(A') = 0.27 + 0.25 + 0.08 + p + r$ but make a slip in getting 0.6 then use this.		

	1st A1 for $r = 0.07$ <u>or</u> $q = 0.15$		
	2nd A1ft for $r = 0.07$ <u>and</u> $q = 0.15$ <u>or</u> values giving $q + r = 0.22$ provided both q and r are probabilities. Obviously, 2nd A1ft is dependent on the M1		
(e)	B1 for 0.33		
(f)	B1 for any correct expression. Do **not** condone P(…		