Question	Answer	Marks	Guidance
6(a)	[Probability of lemon = $\frac{3}{15}=\frac{1}{5}$] $\left[\left(\frac{4}{5}\right)^6\times\frac{1}{5}=\right]\frac{4096}{78125}, 0.0524$	**B1**	0.0524288 rounded to more than 3SF if final answer
		1	
6(b)	$\left(1-\frac{1}{5}\right)^6$	**M1**	or $\left(\frac{4}{5}\right)^6$. FT *their* $\frac{1}{5}$ or correct. From final answer Condone $\left(\frac{4}{5}\right)^5$ or $\left(\frac{1}{5}\right)\times\left(\frac{4}{5}\right)^5+\left(\frac{4}{5}\right)^6$
	$\frac{4096}{15625}$, 0.262	**A1**	0.262144 rounded to more than 3SF
	Alternative method for question (b)		
	[1 – P(1,2,3,4,5,[6]) =] $1-\left(\frac{1}{5}+\frac{4}{5}\times\frac{1}{5}+\left(\frac{4}{5}\right)^2\times\frac{1}{5}+\left(\frac{4}{5}\right)^3\times\frac{1}{5}+\left(\frac{4}{5}\right)^4\times\frac{1}{5}+\left(\frac{4}{5}\right)^5\times\frac{1}{5}\right)$	**M1**	From final answer Condone omission of $\left(\frac{4}{5}\right)^5\times\frac{1}{5}$
	$\frac{4096}{15625}$, 0.262	**A1**	0.262144 rounded to more than 3SF
		2	

Question	Answer	Marks	Guidance
(c)	$\frac{10}{15}\times\frac{9}{14}\times\frac{8}{13}$	**M1**	$\frac{a}{15}\times\frac{a-1}{14}\times\frac{a-2}{13}$, no additional terms
	$\frac{24}{91}$, 0·264	**A1**	0.263736 rounded to more than 3SF
	Alternative method for question (c)		
	$\frac{3}{15}\times\frac{2}{14}\times\frac{1}{13}+3\times\frac{3}{15}\times\frac{2}{14}\times\frac{7}{13}+3\times\frac{3}{15}\times\frac{7}{14}\times\frac{6}{13}+\frac{7}{15}\times\frac{6}{14}\times\frac{5}{13}$	**M1**	[3Ls + 2Ls1S + 1L2Ss + 3Ss] Condone one numerator error. Condone no multiplications seen if tree diagram complete with probabilities on each branch, scenarios listed and attempt at evaluation
	$\frac{24}{91}$, 0·264	**A1**	0.263736 rounded to more than 3SF
	Alternative method for question (c)		
	$1-\left(\frac{5}{15}\times\frac{4}{14}\times\frac{3}{13}+3\times\frac{5}{15}\times\frac{4}{14}\times\frac{10}{13}+3\times\frac{5}{15}\times\frac{10}{14}\times\frac{9}{13}\right)$	**M1**	1 – P(3,2,1 oranges) Condone one numerator error.
	$\frac{24}{91}$, 0·264	**A1**	0.263736 rounded to more than 3SF
	Alternative method for question (c)		
	$\frac{{}^{10}C_3}{{}^{15}c_3}$	**M1**	
	$\frac{24}{91}$, 0·264	**A1**	0.263736 rounded to more than 3SF
		2	

Question	Answer	Marks	Guidance
(d)	$\frac{7}{15}\times\frac{5}{14}\times\frac{3}{13}\times 3!$	**M1**	All probabilities of the form: $\frac{7}{a}\times\frac{5}{b}\times\frac{3}{c}$, $13 \leqslant a,b,c \leqslant 15$
		M1	$\frac{e}{f}\times\frac{g}{h}\times\frac{i}{j}\times 3!$ e,f,g,h,i,j positive integers forming probabilities or 6 identical probability calculations or values added, no additional terms
	$\frac{3}{13}$, 0·231	**A1**	0·230769 rounded (not truncated) to more than 3SF
	Alternative method for question (d)		
	$\frac{{}^{3}C_{1}\times{}^{5}C_{1}\times{}^{7}C_{1}}{{}^{15}C_{3}}$	**M1**	$\frac{{}^{3}C_{1}\times{}^{5}C_{1}\times{}^{7}C_{1}}{k}$, k integer > 1 Condone use of permutations
		M1	$\frac{{}^{3}C_{a}\times{}^{5}C_{b}\times{}^{7}C_{c}}{{}^{15}C_{3}}$, $0<a<3$, $0<b<5$, $0<c<7$, Condone use of permutations
	$\frac{3}{13}$, 0·231	**A1**	0·230769 rounded (not truncated) to more than 3SF
		3	

Question	Answer	Marks	Guidance
(e)	$\dfrac{\frac{7}{15}\times\frac{6}{14}\times\frac{5}{13}+\frac{3}{15}\times\frac{7}{14}\times\frac{6}{13}\times 3}{their(c)}$ $\left[=\frac{14}{65}\div\frac{24}{91}\right]$	**B1**	$\frac{3}{15}\times\frac{7}{14}\times\frac{6}{13}\times 3$ seen (SSL, SLS, LSS) **SC B1** $\frac{3}{65}\times 3, \frac{126}{2730}\times 3$ seen
		B1	$\frac{7}{15}\times\frac{6}{14}\times\frac{5}{13}$ seen in numerator (SSS) **SCB1** $\frac{210}{2730}, \frac{1}{13}$ seen in numerator
		M1	Fraction with *their* **(c)** or correct in denominator $\left(\frac{720}{2730}, \frac{24}{91}, 0.263736\right)$
	$=\frac{49}{60}$, 0·817	**A1**	Accept $0.81\dot{6}$
	Alternative method for question (e)		
	$\dfrac{{}^{7}C_{2}\times{}^{3}C_{1}+{}^{7}C_{3}}{{}^{10}C_{3}}$	**B1**	${}^{7}C_{2}\times{}^{3}C_{1}$ seen (SSL, SLS, LSS) **SCB1** 21 × 3 seen or use of permutations
		B1	${}^{7}C_{3}$ seen in numerator (SSS) **SCB1** 35 seen in numerator or use of permutations
		M1	Fraction with ${}^{10}C_{3}$ or consistent with *their* numerator of **6(c)** in denominator
	$=\frac{49}{60}$, 0·817	**A1**	Accept $0.81\dot{6}$
		4	