Question	Answer	Marks	Guidance
(a)	$\left[\left(\frac{5}{6}\right)^7 \times \frac{1}{6} = \right] 0.0465, \frac{78125}{1679616}$	**B1**	$0.0465 \leqslant p < 0.04652$
		1	

Question	Answer	Marks	Guidance
(b)	$\mathrm{P}(X < 6) = 1 - \left(\frac{5}{6}\right)^5$ or $\frac{1}{6} + \left(\frac{5}{6}\right)\left(\frac{1}{6}\right) + \left(\frac{5}{6}\right)^2\left(\frac{1}{6}\right) + \left(\frac{5}{6}\right)^3\left(\frac{1}{6}\right) + \left(\frac{5}{6}\right)^4\left(\frac{1}{6}\right)$	**M1**	$1 - p^n$, $0 < p < 1$, $n = 4, 5, 6$ or sum of 4, 5 or 6 terms $p \times (1-p)^n$ for $n = 0,1,2,3,4(5)$.
	0.598, $\frac{4651}{7776}$	**A1**	
		2	
(c)	[Probability of total less than 4 is] $\frac{3}{36}$ or $\frac{1}{12}$	**B1**	SOI
	[1 – P(0, 1, 2)] $= 1 - ({}^{10}\mathrm{C}_0 \left(\frac{1}{12}\right)^0 \left(\frac{11}{12}\right)^{10} + {}^{10}\mathrm{C}_1 \left(\frac{1}{12}\right)^1 \left(\frac{11}{12}\right)^9 + {}^{10}\mathrm{C}_2 \left(\frac{1}{12}\right)^2 \left(\frac{11}{12}\right)^8)$	**M1**	One term ${}^{10}\mathrm{C}_x \; p^x (1-p)^{10-x}$, for $0 < x < 10$, $0 < p < 1$.
	1 – (0.418904 + 0.380822 + 0.155791)	**A1 FT**	Correct expression. Accept unsimplified.
	0.0445	**A1**	$0.04448 \leqslant p \leqslant 0.0445$
		4	