Que.	Scheme	Marks	AOs
5(a)	$X = 0, 1, 2$ only	B1	3.1b
	$[\text{P}(X = 0) =]\dfrac{6}{8} \times \dfrac{5}{7} \times \dfrac{4}{6}$	M1	1.1b
	$[\text{P}(X = 1) =]3 \times \dfrac{2}{8} \times \dfrac{6}{7} \times \dfrac{5}{6}$ or $[\text{P}(X = 2) =]3 \times \dfrac{2}{8} \times \dfrac{1}{7} \times \dfrac{6}{6}$	M1	2.1
	<table><tr><td>x</td><td>0</td><td>1</td><td>2</td></tr><tr><td>$\text{P}(X = x)$</td><td>$\dfrac{5}{14}$</td><td>$\dfrac{15}{28}$</td><td>$\dfrac{3}{28}$</td></tr></table>	A1 A1	1.1b 1.1b
		(5)	
(b)	$J \sim \text{B}(10, \frac{1}{9})$	M1	3.1b
	$\text{P}(J \ge 4) = 1 - \text{P}(J \le 3)$ or $\text{P}(J \ge 4) = \text{P}(J = 4) + \text{P}(J = 5) + ... + \text{P}(J = 10)$ or $1 - 0.981(57...)$	M1	3.4
	$=$ awrt 0.0184	A1	1.1b
		(3)	
			(8 marks)

	Notes
(a)	**B1:** identifying that *X* can only take on the values 0, 1 and 2 (may be seen at end of tree diagram). If other values stated, they must be associated with a probability of 0. **M1:** correct expression for $\text{P}(X = 0)$ **M1:** correct expression for either $\text{P}(X = 1)$ or $\text{P}(X = 2)$ **A1:** one correct probability Watch out for $\dfrac{6}{8} \times \dfrac{5}{7} = \dfrac{15}{28}$ which is an incorrect attempt at $\text{P}(X = 0)$ and scores M0A0 **A1:** complete probability distribution, need not be in a table, but each value of *x* must be associated with its probability. Allow awrt 0.357, awrt 0.536, awrt 0.107
(b)	**M1:** identifying that the B(inomial) distribution with $n = 10$ is appropriate here. If distribution not stated, may be implied by use of $(10\text{C}r)\,p^r(1-p)^{10-r}$ or $0.981(57...)$ **M1:** writing or using a correct probability statement **A1:** awrt 0.0184 Correct answer scores 3 out of 3