

Question	Scheme	Marks	AOs
<b>5(a)</b>	The alternative hypothesis should be $H_1 : p > 0.15$	B1	2.5
	The calculation of the test statistic should be $P(X \geq 8)$ [= 0.0698]	B1	2.3
		(2)	
<b>(b)</b>	These will affect the conclusion (as the null hypothesis should not be rejected) since $P(X \geq 8)$ [= 0.0698] is greater than 0.05	B1	2.4
		(1)	
<b>(c)</b>	$P(X \leq 8) = 0.9722... > 0.95$ or $P(X \geq 9) = 0.0277... < 0.05$	M1	2.1
	CR: $\{X \geq 9\}$	A1	1.1b
		(2)	
<b>(d)</b>	awrt <b><u>0.0278</u></b>	B1ft	1.1b
		(1)	

**(6 marks)**

### Notes

<b>(a)</b>	<b>B1:</b> Identifying that $\geq$ should be $>$ in the alternative hypothesis <b>B1:</b> Identifying that $P(X = 8)$ should be $P(X \geq 8)$ Stating $P(X = 8)$ is incorrect on its own is insufficient Check for errors identified and corrected next to the question
<b>(b)</b>	<b>B1:</b> Will affect conclusion <b>and</b> correct supporting reason
<b>(c)</b>	<b>M1:</b> For use of tables to find probability associated with critical value [ $P(X \leq 8)$ or $P(X \geq 9)$ with B(30, 0.15) (may be implied by either correct probability awrt 0.97 or awrt 0.03) or by the correct CR] <b>A1:</b> $[30 \geq] X \geq 9$ o.e. e.g. $X > 8$ Allow '9 or more' or 'CR $\geq 9$ '
<b>(d)</b>	<b>B1ft:</b> awrt 0.0278 (allow awrt 2.78%) or correct ft their one-tailed upper CR from B(30, 0.15) to 3s.f.