Question	Scheme	Marks	AOs
2(a)	Use of $X \sim \mathrm{B}(40, 0.29)$	M1	1.1b
	$\mathrm{P}(X \geqslant 11)$ $\left[=1-\mathrm{P}(X \leqslant 10)\right] = 0.64104\ldots$ 0.641 *	A1*	2.1
		(2)	
(b)(i)	$Y \sim \mathrm{B}(5, 0.641\ldots)$	M1	3.3
	$\mathrm{P}(Y \leqslant 1)$ $\left[=\mathrm{P}(Y=0)+\mathrm{P}(Y=1)\right]$	M1	3.4
	awrt 0.0592	A1	1.1b
		(3)	
(b)(ii)	The proportion of customers choosing meat-free meals each day is constant **or** Each evening is independent	B1	3.5b
		(1)	
(c)	$\mathrm{H}_0: p = 0.29$ $\mathrm{H}_1: p \neq 0.29$	B1	2.5
	$X \sim \mathrm{B}(40, 0.29)$	M1	3.3
	$\mathrm{P}(X \leqslant 6) = 0.03219$ awrt 0.0322	A1	1.1b
	[0.0322 > 0.025, accept H_0] Insufficient evidence to suggest the **proportion of customers choosing menu B** has **changed.**	A1	2.2b
		(4)	
			(10 marks)

Notes:

(a)	**M1:**	Use of the correct distribution, may be implied by sight of e.g. 0.359, 0.764 or 0.236
	A1*:	$\mathrm{P}(X \geqslant 11)$ **and** 0.641 or better, with no incorrect working
(b)(i)	**M1:**	Writing or using the correct distribution and $\mathrm{P}(X \geqslant 11)$
	M1:	Use of $\mathrm{P}(Y \leqslant 1)$, might see $\mathrm{P}(Y=0)+\mathrm{P}(Y=1)$ $\left[(1-0.641\ldots)^5 + 5(0.641\ldots)(1-0.641\ldots)^4\right]$ Can be implied by correct answer
	A1:	awrt 0.0592
(b)(ii)	**B1:**	Correct assumption in context
(c)	**B1:**	For both hypotheses correct and in p or π
	M1:	Writing the correct distribution, or evidence of using it
	A1:	awrt 0.0322
	A1:	Correct statement including **proportion, customers,** and **vegan/meat-free/ menu B** Do not allow contradictory statements