Question Number	Scheme	Marks
3 (a)	Po(7)	B1
		(1)
(b)	**Customers** enter the shop occur singly/randomly/independently/**constant** (average) rate	B1, B1
		(2)
(c)	$H_0 : \lambda = '7'$ $H_1 : \lambda \neq '7'$	B1ft
		(1)
(d)	P(X ≤ 2) = awrt 0.0073 P(X ≤ 2) = awrt 0.0296	M1
	P(X ≥ 13) = awrt 0.0270 P(X ≥ 14) = awrt 0.0128	M1
	$X \leqslant 2 \cup X \geqslant 14$	A1
		(3)
(e)	$0.0073 + 0.0128 = 0.0201$	M1
	So 2.01%	A1ft
		(2)
(f)	12 is not in the critical region	M1
	So, there is insufficient evidence that **rate** of **customers** entering the shop has **changed**	A1
		(2)

	Notes	**Total 11**
(a)	**B1**	Correct distribution fully specified. Po(isson) and $\lambda = 7$
(b)	**B1, B1**	For two of the given assumptions (must have context of customers/people) Context only needs to be stated once. (B1B0 for one assumption in context **or** for two assumptions with no context)
(c)	**B1ft**	Both hypotheses correct. Must be attached to H_0 and H_1 in terms of λ or μ Ft their 7 from part (a) in the hypotheses
(d)	**M1**	Use of Po(7) to find the lower critical value. May be implied by either awrt 0.0073 or awrt 0.0296 seen (must be seen in part (d)) Also implied by X =1 or $X \leqslant 2$
	M1	Use of Po(7) to find the upper critical value. May be implied by awrt 0.0270 or awrt 0.0128 or awrt 0.973 or awrt 0.987 seen (must be seen in part (d)) Also implied by X =14 or $X \geqslant 14$
	A1	$X \leqslant 2, X \geqslant 14$ correct CR scores 3 out of 3 but $14 \leqslant X \leqslant 2$ is M1M1A0 Allow equivalent forms e.g. $X < 2$, $X > 13$ Must be a CR and not a probability statement P($X \leqslant 2$), P($X \geqslant 14$) scores M1M1A0
(e)	**M1**	Adding the two probabilities (each must be less than 0.05) for their critical region
	A1ft	awrt 0.0201 or awrt 2.01% ft the sum of their two selected probability tails
(f)	**M1**	For a correct comparison of 12 with their CR (or their implied CR if one is not explicitly stated), 12 is not in the CR condone 12 < '14' Finding P(X = 12) is M0 Finding P($X \leqslant 12$) on its own is M0, they must state 12 is not in the CR
	A1	Correct conclusion in context. Must be a rate, e.g. number in/per 10-minute period (not number on its own). No hypotheses in part (c) then A0 Do not allow comments about the manager's claim on its own, e.g. The manager's claim is not supported. This is not a ft mark.