Question Number	Scheme	Marks
2(a)	Poisson with $\lambda = 10$	B1
		(1)
(b)	**Customers** [enter the shop] singly/randomly/independently/at a constant rate	B1
		(1)
(c)	$H_0 : \lambda = "10"$ $H_1 : \lambda \neq "10"$	B1ft
		(1)
(d)	$[P(X \leqslant 3) =]$awrt 0.0103 $[P(X \leqslant 4) =]$awrt 0.0293	M1
	$[P(X \geqslant 17) =]$awrt 0.0270 $[P(X \geqslant 18) =]$awrt 0.0143	M1
	$X \leqslant 3 \cup X \geqslant 18$ oe	A1
		(3)
(e)	0.0103 + 0.0143 = 0.0246	M1
	So 2.46%	A1ft
		(2)
(f)	[16 is] not in the CR/Do not reject H_0/Not significant	M1
	There is insufficient evidence to suggest that the **rate/number/amount** of customers entering the shop has **changed**/[is] **different** oe	A1ft
		(2)

	Notes	**Total 10**
(a)	**B1**	for Poisson/Po and $\lambda = 10$
(b)	**B1**	for a correct assumption (must have context of customers/people) Ignore irrelevant or incorrect statements
(c)	**B1ft**	both hypotheses correct. Must be correctly attached to H_0 and H_1 in terms of λ or μ ft part a Allow $H_0 : \lambda = 20$ $H_1 : \lambda \neq 20$
(d)	**M1**	for use of Po(10) to find the lower critical value. May be implied by awrt 0.0103 or awrt 0.0293 or a correct lower critical region (These must be seen in part (d))
	M1	for use of Po(10) to find the upper critical value. May be implied by awrt 0.027 or awrt 0.0143 or awrt 0.973 or awrt 0.9857 or a correct upper critical region (These must be seen in part (d))
	A1	for a correct critical region oe e.g. $X < 4$ and $X > 17$ Allow $0 \leq x \leqslant 3$ and $18 \leq x \leqslant 20$ or {0, 1, 2, 3} {18, 19, …} Condone use of () or [] for {} Do not allow if written as probability statements Allow any letter. Accept CR $\leqslant 3$ CR $\geqslant 18$
(e)	**M1**	for adding the probabilities for the 2 tails of their CR together May be implied by a correct answer
	A1ft	awrt 0.0246 or ft their CR
(f)	**M1**	dependent on having found a 2 tailed CR in part (d) for a correct statement (ft their 2 tailed CR) – no context needed but do not allow contradicting non contextual comments. May be implied by a correct contextual statement on its own. We ignore any comparison of numbers/probabilities
	A1ft	correct conclusion in context (ft their 2 tailed CR). Must contain the words in bold oe. No hypotheses in part (c) then A0 Allow equivalent statements e.g. The mean **rate** has not **changed/still** 10