Question	Scheme	Marks
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3(a)	[Let X = number of hacking attempts per hour] $P(X \geq 1) = 1 - P(X = 0) =$ $1 - e^{-0.3} = 0.2591\ldots$ awrt **0.259***	M1 A1cso (2)
(b)	$Y \sim Po(7.2)$ $P(Y = 6) = \dfrac{e^{-7.2} \times 7.2^6}{6!} = 0.144458...$ awrt **0.144**	B1 M1 A1 (3)
(c)	$H_0 : \lambda = 0.3$ or $\mu = 50.4$ $H_1 : \lambda < 0.3$ or $\mu < 50.4$ $W \sim Po(50.4)$ can be approximated by N(50.4, 50.4) $P(W \leq 38) \approx P\left(Z < \dfrac{38.5 - 50.4}{\sqrt{50.4}}\right)$ $\approx P(Z < -1.676...) = 0.0468$ (calc) $\approx P(Z < -1.68) = 0.0465$ (tables) Reject H_0/significant There is evidence of a decrease in the rate of hacking attempts **or** Saira's belief is supported.	B1 B1 M1 M1 A1 dM1 A1cso (7) **Total [12]**
	Notes	
(a)	M1 writing or using $1 - P(X = 0)$ A1cso correct expression $1 - e^{-0.3}$ (allow $1 - \dfrac{e^{-0.3}0.3^0}{0!}$) and awrt 0.259	
(b)	B1 writing or using Po(7.2) M1 correct expression A1 awrt 0.144 (allow 0.1445)	
(c)	1st B1 both hypotheses correct must be λ or μ 2nd B1 writing or using N(50.4, 50.4) 1st M1 for $\pm\left(\dfrac{37.5 / 38 / 38.5 - \textit{their mean}}{\textit{their sd}}\right)$ If they do not have not given a mean and variance they must be correct in here. (allow 1 ± standardisation) If no mean or var given they must be correct here. 2nd M1 use of continuity correction 38±0.5 1st A1 for answer in the range 0.0465 - 0.04685 Allow awrt 0.9532 > 0.95 or 0.9535 > 0.95 3rd dM1 Dependent on the 1st M1. For a correct statement i.e. significant/reject H_0 May be a contextual one. Follow through their probability and their H_1 Do not allow non-contextual conflicting statements NB Do not award if no hypotheses given but can award if letter missing or incorrect letter used. 2nd A1cso all previous marks must be awarded and correct contextual statement. Words in bold or their equivalent must be seen. Allow equivalent words for decrease eg lessened, for rate eg number, for belief eg claim, for supported eg true, right, correct, for Saira's eg her	