Question Number	Scheme		Marks
5(a)			
	$5.84 = e^{-2.8} \times n$ [n = 96]		M1
	Observed (a =) 5 and Expected (b =) awrt 8.37…		A1
			(2)
(b)	H_0: Poisson(2.8) is a suitable model H_1: Poisson(2.8) is not a suitable model		B1
	For combining last two cells. Observed = 3, Expected = 6.25		M1
	$\chi^2 = \sum \frac{(O-E)^2}{E} = \frac{("5"-"8.37")^2}{"8.37"} + \frac{(3-6.25)^2}{6.25} + 9.86$		M1
	= awrt **12.9**		A1
	Degrees of freedom = "7" – 1 $\chi^2_{6,0.05} = 12.592$		M1 A1
	[Reject H_0] Data is not consistent with a Poisson [(2.8)] model.		A1
			(7)

Notes

(a)	**M1**	Setting up an equation leading to a value for n. eg $\frac{e^{-2.8}(2.8)^5}{5!}n = n - 87.63$ May be implied by n = 96 (not awrt 96) or correct value of a (observed) or correct value of b (expected).
	A1	both 5 cao **and** awrt 8.37
(b)	**B1**	Both hypotheses correct. Must mention Po(2.8) at least once.
	M1	For combining last 2 cells to get observed 3 and expected 6.25 or $\frac{(3-6.25)^2}{6.25}$ seen.
	M1	For $\frac{("5"-"8.37")^2}{"8.37"} + 9.86 + ...$ or for a full method with 7 terms evaluated (condone 6 or 8 terms)
	A1	awrt 12.9 (this is dependent upon 1st M1)
	M1	Using df for their number of cells – 1
	A1	12.592 (allow 14.067 from df = 8 – 1 if last 2 cells not combined or allow 11.07[0] from df = 6 – 1 if last 3 cells combined)
	A1	Jeff's model/Poisson is not suitable. Do not need to see 2.8 here. (dep on all M marks) Do not allow contradictory comments.