

Question # 47**Answer: C**

The maximum likelihood estimate for the Poisson distribution is the sample mean:

$$\hat{\lambda} = \bar{x} = \frac{50(0) + 122(1) + 101(2) + 92(3)}{365} = 1.6438.$$

The table for the chi-square test is:

Number of days	Probability	Expected*	Chi-square
0	$e^{-1.6438} = .19324$	70.53	5.98
1	$1.6438e^{-1.6438} = .31765$	115.94	0.32
2	$\frac{1.6438^2 e^{-1.6438}}{2} = .26108$	95.30	0.34
3+	.22803**	83.23	0.92

*365x(Probability) **obtained by subtracting the other probabilities from 1

The sum of the last column is the test statistic of 7.56. Using 2 degrees of freedom (4 rows less 1 estimated parameter less 1) the model is rejected at the 2.5% significance level but not at the 1% significance level.