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7. Jeff records the number of births announced in his local weekly newspaper each week for n consecutive weeks, where n is an integer. He decides the resulting data can be modelled as independent samples from a Poisson distribution with mean 2.8 and calculates the expected frequencies using this model.

The following table shows the observed frequencies and the expected frequencies, to 2 decimal places.

The observed and expected frequencies for 5 births are not given.

Number of births	Observed frequency (O)	Expected frequency (E)
0	8	5.84
1	27	16.35
2	25	22.88
3	16	21.36
4	12	14.95
5		
6	2	3.91
$\geqslant 7$	1	2.34

(a) Work out the observed and expected frequencies for 5 births.

(2)

The value of $\sum \frac{(O-E)^2}{E}$ for the given values for the number of births 0, 1, 2, 3 and 4 is 9.86

(b) Using a 5% significance level, test whether or not this Poisson model is suitable. State your hypotheses clearly.

(7)

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Question 7 continued

Q7

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