4. The number of jobs sent to a printer per hour in a small office is recorded for 120 hours. The results are summarised in the following table.

Number of jobs	0	1	2	3	4	5
Frequency	24	34	28	21	8	5

(a) Show that the mean number of jobs sent to the printer per hour for these data is 1.75

(1)

The office manager believes that the number of jobs sent to the printer per hour can be modelled using a Poisson distribution.

The office manager uses the mean given in part (a) to calculate the expected frequencies for this model. Some of the results are given in the following table.

Number of jobs	0	1	2	3	4	5 or more
Expected frequency	20.85	36.49	31.93	r	s	3.95

(b) Show that the value of s is 8.15 to 2 decimal places.

(1)

(c) Find the value of r to 2 decimal places.

(1)

The value of $\sum \frac{(O_i - E_i)^2}{E_i}$ for the first four frequencies in the table is 1.43

(d) Test, at the 5% level of significance, whether or not the number of jobs sent to the printer per hour can be modelled using a Poisson distribution.
Show your working clearly, stating your hypotheses, test statistic and critical value.

(7)

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Question 4 continued

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Question 4 continued

(Total for Question 4 is 10 marks)