**3** A mobile phone company offers an insurance policy to its customers when they purchase a mobile phone. The company conducted a survey on the age of the customers and whether or not claims were made.

A random sample of 1200 customers from this company was investigated for 2020 and the results are shown in the table below.

| | | Claim made in 2020 | No claim made in 2020 | Total |
|---|---|---|---|---|
| **Age** | **17 – 20 years** | 24 | 176 | 200 |
| | **21 – 50 years** | 48 | 652 | 700 |
| | **51 years and over** | 14 | 286 | 300 |
| | **Total** | 86 | 1114 | 1200 |

The data are to be used to determine whether or not making a claim is independent of age.

(a) Calculate the expected frequencies for the age group 51 years and over that

(i) made a claim in 2020

(ii) did not make a claim in 2020

**(2)**

The 4 classes of customers aged between 17 and 50 give a value of

$\sum \frac{(O-E)^2}{E} = 7.123$ correct to 3 decimal places.

(b) Test, at the 1% level of significance, whether or not making a claim is independent of age. Show your working clearly, stating your hypotheses, the degrees of freedom, the test statistic and the critical value used.

**(7)**

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**Question 3 continued**

**(Total for Question 3 is 9 marks)**