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General Certificate of Education (A-level)
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Statistics SS05

(Specification 6380)

Statistics 5

Report on the Examination

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General

Generally candidates were well prepared, although anything unexpected, such as the rectangular distribution in question 2, caused problems.

Question 1

Most candidates calculated the test statistic correctly but many lost marks by comparing it with the upper tail of the χ^2 distribution. When carrying out a 2-sided test, it is safest to find critical values from both tails of the χ^2 distribution. However, if as in this case, the calculated value, s, is less than the hypothesised value of σ, it is sufficient to compare with the lower tail.

Question 2

Some candidates were thrown by the rectangular distribution and tried to fit normal or exponential distributions to the data. Those who failed to notice that the first time interval was longer than the others were still able to achieve a good mark on part (a)(i). There were good answers to all the other parts although it was rare for a candidate to answer all the remaining parts successfully. Comparing relevant Os and Es was particularly useful in answering parts (b)(i) and (c) but few candidates did this.

Question 3

Parts (a)(i) and (ii) were well answered by the majority. The most common error was to use s instead of s^2 when calculating the limits for the standard deviation. Some attempted to answer part (b) without reference to their calculations in part (a): only a limited number of marks were available for such answers. Those who used their results in part (a) generally achieved a good mark on part (b).

Question 4

Many candidates were well prepared for this question and scored high marks. Some quoted the fact that the exponential distribution has no memory in part (c); others earned the marks the hard way by, in effect, demonstrating that the exponential distribution has no memory.

Question 5

Part (a) was usually well answered although, as in question 3, some used s instead of s^2. Some calculated the test statistic using smaller s^2 over larger s^2. This was fine but most of those who did this did not know how to find the relevant lower tail critical value of F. Most problems in part (b) were, understandably, caused by the difference of 10 minutes but there were some excellent answers. Most candidates achieved a reasonable mark on part (b) usually largely due to a good answer to part (b)(i).

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