



**General Certificate of Education (A-level)
January 2012**

Statistics

SS04

(Specification 6380)

Statistics 4

Report on the Examination

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Question 1

This question was generally well answered with hypotheses usually correct. A few candidates used critical values from the normal distribution instead of the t -distribution, and a small minority omitted $\sqrt{11}$ from their calculation of the test statistic. Most drew the correct conclusion and placed it in context.

Question 2

The calculations were well done, but the implications were often misunderstood. In part (a), an event had occurred which was unlikely if the tyres were in good condition. Hence buying new tyres seemed a good idea (admittedly two punctures is not on its own sufficient evidence to prove that new tyres are needed). Similarly in part (b), an event has occurred which is extremely unlikely if the chain is worn out so it seems unnecessary to buy a new chain.

Question 3

The confidence interval in part (a) was usually calculated correctly. Part (b) caused more problems, although most candidates used the correct hypotheses and correctly identified the appropriate binomial distribution. Part (c) was less well done. While a comment on both parts (a) and (b) was desirable, many commented that 40% lay in the confidence interval calculated in part (a) without realising that this interval was for the proportion that have never attempted a DIY job, and not for the proportion that have used kitchen cutlery instead of the appropriate tools.

Question 4

Most candidates answered part (a) correctly. A few added standard deviations instead of variances, while some multiplied the variances — a mistake which has been very infrequent in the past. Few candidates managed part (b)(ii), most not getting as far as evaluating the time to reach Copenhagen if Bergitte missed the 10.00 am boat. However, in part (b)(iii), most sensibly advised Bergitte to leave home earlier.

Question 5

It was common for candidates to correctly calculate the confidence interval in part (a) and then take the opportunity in part (b) to demonstrate that they did not know what a confidence interval is. However there were some excellent answers.

Question 6

Although the hypotheses were usually correctly stated in both parts (a) and (b), this question caused candidates problems. In part (a), most made a reasonable attempt at a normal approximation, except that many, having made the hypothesis that the mean was 30, used a mean of 24 in their calculations. Another common error in part (a) was to use a normal approximation to calculate $P(X > 1.6 \text{ given } \mu = 2)$, incorrectly assuming it was the same as $P(X > 24 \text{ given } \mu = 30)$. The equivalent errors were also common in part (b).

In part (c), some thought that, because they had accepted that Lorraine had a mean of 2 viewers per week and also accepted that Imran had a mean of 1.6 viewers per week, it followed that Lorraine had more viewers than Imran. They failed to appreciate that, although there was no significant evidence that Lorraine's long term mean was less than 2 viewers per week and no significant evidence that Imran's long term mean was more than 1.6 viewers per week, Imran's observed mean was higher than Lorraine's observed mean.

Mark Ranges and Award of Grades

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