General Certificate of Education

Statistics 6380

SS05 Statistics 5

Report on the Examination

2010 examination – June series

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General

Most candidates were well prepared for the hypothesis tests and confidence intervals but found the questions on the rectangular and exponential distributions challenging.

Question 1

Although nearly all candidates successfully demonstrated that the parameter of the distribution was 1.25, many then went on to use 0.8 as the parameter in the rest of the question. In parts (b) and (c), a common error was to use the wrong tail of the distribution. Those who answered part (c)(ii) correctly often used conditional probability. Using the fact that the distribution has no memory leads to a much easier solution. A fairly common error was to calculate the probability of no stitches missed in the first half and at least one missed in the second.

Question 2

Part (a) was usually well answered although some used (difference of means – 5) as the numerator, presumably on the (irrelevant) grounds that the water temperature was taken after five hours. Some candidates failed to attempt a pooled variance estimate.

Question 3

Most candidates were completely defeated by part (a)(i). Even those who had some idea that all Tommos were involved rarely mentioned the essential fact that the population was the **salt content** of all Tommos produced by the restaurant. In part (a)(ii), the confidence interval for the standard deviation was well answered but a z-value instead of a t-value was often used in the confidence interval for the mean. Most made a reasonable attempt at part (a)(iii), and part (b) was the best answered part of a question on the whole paper.

Question 4

The calculation was usually handled well, with the majority realising that the last class for the Es should be 'greater than or equal to 5'. Grouping was usually competently carried out but there was some difficulty with the degrees of freedom, with 4 being commonly used. Few obtained full marks for part (b), finding explanation difficult and falling back on writing down the words 'random' and 'independent' in the hope this would be sufficient to gain marks. Several stated the Poisson distribution should have a 'constant rate' rather than a 'constant mean rate', some explaining that this could not be the case here as not all weeks had the same number of incidents.

Question 5

Several used σ instead of μ in the hypotheses. Disappointingly, many stated that the significance level was 95%.

Question 6

Candidates found this question difficult. A majority answered part (a) correctly and many realised that a probability had to be cubed in part (b)(i) but failed to identify the correct probability. Only a minority made progress with parts (b)(ii) and (c).

Mark Ranges and Award of Grades

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