Examiners' Report/
Principal Examiner Feedback

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GCE Statistics S4 (6686)
Paper 01

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Statistics S4 (6686)

Introduction

Overall the paper worked well enabling nearly all candidates to demonstrate what they knew but also allowing the stronger candidates to show their true potential. Most candidates found Q1, Q3, and Q6 accessible with many scoring highly here. Q2 and Q4 proved to be good discriminators and only the better candidates gained high marks in these.

Question 1

This question was a relatively easy introduction to the paper with many candidates gaining full marks.

Question 2

In part (a) many candidates gained full marks however, a significant number used a 2 sample t-test instead of a paired t-test so gaining no marks. The most common errors made in part (b) were to omit the hypotheses, check 0.375 was in the interval rather than 0 and not give the conclusion in context. Others chose not to use their confidence interval at all even though this was requested in the question.

Question 3

Part (a) was answered well with many candidates gaining full marks. In part (b) although a pooled estimate was worked out correctly by many candidates they then failed to use the square root of it in their calculations of *t*. In part (b) A minority of candidates chose to use 1 and 2 in the hypotheses rather than *A* and *B* without defining what they were.

And in part (c) candidates knew that to carry out the test in part(b) the variances needed to be equal but few commented on the fact that this has been established in part (a).

Question 4

This question was attempted with various degrees of success. Part (a) was generally well answered with many candidates gaining full marks. The most common error was to get E($\overline{X}$) = 3a/2. The candidates who got part (a) correct generally went on to get $k = 2$ in part (b). In part(c) the most common error was to use an incorrect formula for Var(X). The weaker candidates found part (d) difficult with many fudging their answers. The most common errors were to find the integral of f(x) rather than xf(x) and not including a conclusion that M was therefore unbiased.

In part (f) candidates demonstrated that they understood what makes the best estimator. In part (g) many candidates gave 5 as the maximum but then went on and carried out a variety of incorrect calculations to find a, hence losing the mark. It should be noted that if a question is worth 1 mark that it is unlikely to require half a page of working. In part (g) the majority of candidates suggested the statisticians was best but only referred to the power of the test and not the time taken.

Question 5

Parts (a) and (b) were poorly answered with many candidates simply using $\lambda = 1$ in part (a) and $\lambda = 2.5$ in part (b) not realising that they needed to double their values. In part (c) a minority of candidates did not write down an expression in terms of probabilities. As this is a 'show that' question it is important that this stage is included in the working. Simply writing down the given answer multiplied out is not enough to gain the marks. Parts (d) and (e) were very well answered. The majority of candidates were unable to make much progress with part (f). Many simply substituted in values for lambda. Those who were able to work out the expected times in terms of lambda were able to get the correct result.

Question 6

The two tailed F test was usually tackled quite well although there were many calculator errors made when calculating s_A and s_B.

In part (b) a minority of candidates were able to calculate the pooled estimate of variance but then went on and used the formula for the confidence interval for the variance of a single sample.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwant to/Pages/grade-boundaries.aspx