Examiners' Report/
Principal Examiner Feedback

June 2011

GCE Statistics S4 (6686) Paper 1

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Examiners' Report that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

Statistics Unit S4
Specification 6686

Introduction

Overall the paper worked well enabling candidates to demonstrate what they knew but also allowing the stronger candidates to show their true potential. Most candidates found questions 1, 3 and 4 accessible with many scoring highly here.

Question 6 proved to be a good discriminator and only the better candidates made significant progress through these. Generally candidates were able to carry out calculations but showed a lack of understanding when they had to use or interpret the answer to their calculations.

The presentation of the work was poorer than in previous years. Candidates need to show all their working so they can be awarded the method marks when they make a careless slip in the calculation.

Report on individual questions

Question 1

This question was a relatively easy introduction to the paper. Many candidates were able to gain full marks.

Question 2

This question was answered poorly. Many 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.

Question 3

The majority of the candidates recognised the need to use a paired *t*-test with only the weaker ones using a test for two means. The hypotheses were not always correctly specified even though the correct test was carried out and some candidates did not give their conclusion relative to the context of the question.

Question 4

Parts (a), (b), (c) and (e) were answered well with many candidates gaining full marks. In part (d) few candidates realised that they were required to work out
$P(Y \geq 2) + P(Y = 1) \times P(Y \geq 2)$. Those that did were generally able to reach the correct answer.

In part (d) several candidates were able to say when each test should be used but were unable to draw a correct conclusion for this situation. Only a few referred to the likelihood of the probability being over 0.125 was small so the consultants test should be used in this case.

Question 5

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

However, full marks were rarely obtained in part (b) often due to inaccuracies made in using the calculator rather than from using an incorrect method. A pooled estimate of variance $s_p^{\ 2}$ was required and this was often attempted but the $\sqrt{\dfrac{1}{6} + \dfrac{1}{5}}$ term sometimes divided into s_p rather than multiplying it. The interpretation in part (c) was often answered well and the follow through enabled those who could interpret the statistics to gain some credit.

Question 6

Many candidates were able to fully correct easy to read solutions to this question whilst others were unable to start.

The main errors made were in part (d) where many candidates did not consider both E(Y) and Var(Y) when deciding whether Y was a consistent estimator and in part (g) where many candidates used the mean of the values rather than the maximum.

Question 7

Part (a) was answered well with many correct solutions. In part (b) many students were unable to differentiate between the two tests. Whilst they usually had the correct critical value for each they generally used the same value for the standard deviation. More often than not this was the unbiased estimate.

Part(c) was poorly done. The few candidates who got different conclusions in part (b) generally had some idea that the normal distribution should be used. However those who had the same conclusion basically rewrote their conclusion to part (a) and (b) with no reference to which test was best.