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# Examiners' Report

## Summer 2015

## Pearson Edexcel GCE in Statistics S3 (6691/01)

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# Mathematics Unit Statistics 3

## Specification 6691/01

## General Introduction

Overall this was a very fair paper which some students found more demanding than in previous years, but which gave the most able students a chance to show their ability. The weakest feature for a significant number of students was the lack of understanding shown of some underlying theory. This meant that question 3, question 4 and question 5 discriminated very well between students.

## Report on individual questions

### Question 1

A straightforward starter question dealing with correlation with most students managing the coefficient easily. They carried out the test well and typically gave its result in context.

The sampling only caused problems to those who are content with text book answers or who decided to go down the systematic route.

### Question 2

The different style for the hypotheses caused some problems to students who liked to have the null hypothesis as an equality and did not realise the problem which arises from non-exhaustive sets of values in the hypotheses. All but the least able students were able to cope with the calculation of the test statistic and a surprisingly large number of students were able to give the test result well in context despite the double "greater than" issue. Many students made sensible use of the wording of the question, especially those who simply spoke about the researcher's claim. The final part revealed a worrying lack of knowledge about the Central Limit Theorem and its importance in testing. Far too many students are still regurgitating the text book and making no effort to answer in the context of the question. There was also some confusion between sample sizes and population sizes.

### Question 3

For all but the least able of students the calculations were easily and accurately carried out. However, very few students had any idea about what the comparison of standard errors was all about. Many of the students who scored poorly here would have used a standard error readily to calculate a sample size or confidence interval, but they have little or no idea of the underlying theory. The sampling was a source of easy marks to most apart from those who resorted to the text book again.

### Question 4

Students were able to calculate a confidence interval with a lot of success, but unfortunately a significant number had no real idea about what they tell us. Students need to understand that we do not talk about population means in terms of probability, but rather that the population mean is fixed and it is the confidence interval which does the moving. The demands of the first part proved too much for a number of students, but most students welcomed the calmer waters of calculating the confidence interval and scored well.

## Question 5

This question discriminated very well. Most students managed the straightforward first part, and many were able to get to the answer in the first two parts of (ii) despite the unusual style of the question. Unfortunately part (c) received a lot of incorrect answers and part (d) even more. The former again revealing a lack of real understanding of the underlying theory and the latter because it was too demanding for many, but a fair test for the most able.

## Question 6

This question allowed competent students to score very well. Far too many students did the first test with an assumption of equal expected values. This probably was a result of not having read the question carefully enough. Students found part (b) and part (e) a good source of marks and part (c) only marginally less so. Too many students were unable to express their hypotheses precisely enough in part (d) but were able to successfully give the correct interpretation of the test result in part (g). Most students were able to explain the calculation of the degrees of freedom in part (f), but too many thought that the pooling of two columns would simply lead to the loss of 1 degree of freedom from the original number.

**Grade Boundaries**

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

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