

Examiners' Report

Summer 2014

Pearson Edexcel GCE in Statistics 3
(6691/01)

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Mathematics Unit Statistics 3

Specification 6691/01

General Introduction

Overall this proved to be an accessible paper, giving the best students the opportunity to score the majority of the marks available. The required methods were well known by a majority of students; however there were some issues in the numerical parts with accuracy. Hypothesis testing questions were answered well with better use of context than in previous examinations. However many students are still confused about whether they have proved the null hypothesis to be true or have not shown the alternative hypothesis to be true for a particular test. Some students lost marks needlessly by failing to show intermediate working in the longer questions.

Report on individual questions

Question 1

This question was not answered particularly well, even by the best students. Problems and misunderstandings in describing how to take a sample were common and many students preferred the equal probability for each element approach in Q01(a). Marks were lost by students failing to be sufficiently precise in their descriptions in later parts. Many students gave an example rather than the lack of a sampling frame in Q01(b). Only weaker students suggested systematic or quota sampling methods. In Q01(c)(i) many students failed to distinguish between the units and the list, whilst others were penalised for not specifying all the students. Generally the best answered part was Q01(c)(ii), however students need to pay attention to the detailed requirements.

Question 2

Most students understood the concept of a statistic and were able to score well in the first part. However the overall quality of work was poor in Q02(b), where too many students failed to engage with the question in any meaningful way. The mean was usually correctly stated by the better students, but the number of students correctly finding the variance was small.

Question 3

This was a routine question for the majority of students. Both the hypotheses and the result of the test were usually given in context and many fully correct solutions were seen here. Premature rounding proved costly in some solutions offered and typically these students did not show all their calculations

Question 4

This was a straightforward question which was a good source of marks for the great majority of students with all but the weakest students offering full solutions. Occasional errors were made in evaluating the variance, such as missing squares or sign changes and prevented some from gaining full marks, but less so than in Q02.

Question 5

Many students failed to give Binomial conditions in context in Q05(a) but Q05(b) and Q05(c) were done well. Many students still wanted to include the probability in their hypotheses but most then went on to perform the test satisfactorily and arrived at the correct conclusion. There were very few students who failed to combine some classes, usually correctly. Also, most students managed to arrive at the correct degrees of freedom. Too many students lost marks at the end of this question by failing to show adequate working when their test statistic lacked accuracy.

Question 6

Very few students were awarded the mark for Q06(a) as they did not make an attempt to find the required expectation. However, typically they went on to gain all the marks in Q06(b), for the most part, reached a successful conclusion in Q06(c). Typical errors here were either choosing the wrong z value or calculating the width of the interval to be twice the correct answer.

Question 7

Marks were lost by some students in Q07(a) by failing to have consistency in the use of signs. The test was well done by all but the weaker students who usually failed to use the correct standard error. However the incorrect use of signs too often lost a mark in the actual test, but these students usually recovered to come to a correct conclusion. Most students gave the result well in context but some lost a mark by not using the key words and /or not concentrating on the “less than” idea. Standardising correctly also proved to be an issue here, but many students scored well on this part.

Question 8

Q08(a) was well done by the great majority but a mark was often lost carelessly by not giving the answer as required. The test in Q08(b) was usually done well with most students speaking of positive correlation in their answer. Ranking accurately was an issue in Q08(c), with many ranking height rather than weight, but the required technique was clearly evident. The test in Q08(d) was also well done by most students with good answers in context using key words. There were more two tailed tests attempted here and a failure to relate their result to the question was more evident than earlier in the question.

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