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General Certificate of Education

Statistics 6380

SS04 Statistics 4

Report on the Examination

2010 examination – January series

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General

Candidates were generally well prepared for this paper. Many used calculators effectively but some relied on them too much. An incorrect answer with no supporting work cannot score marks. Calculations should be checked, perhaps by entering the data a second time in a different order.

Question 1

Both parts of this question were well answered.

Question 2

The main errors in this question were to use a normal approximation in part (a) and to use an incorrect, or no, continuity correction in part (b).

Question 3

Candidates had few problems with part (a).

Most made a good attempt at the normal approximation in part (b), although the sign of the test statistic and/or the critical value was sometimes incorrect. Some attempted a *p*-value in part (b), often successfully, but on other occasions it was compared to a *z*-value. It appeared to be the candidates who were over-reliant on their calculators who made this mistake.

In part (c), some candidates attempted approximations despite the question asking for an exact test. As in part (b), some candidates compared a *p*-value with a *z*-value.

It was pleasing that nearly all candidates picked up some marks on part (d). It was disappointing that hardly anyone pointed out that there was some evidence to show a reduction in customers although this evidence was not significant at 1%. Full marks could be obtained, and often were, without making this point but it would have demonstrated a full understanding of hypothesis testing.

Question 4

As usual, this type of question proved the most demanding on the paper. In part (a), some candidates had difficulty working out how many minutes there are between 9 am and 11 am.

Despite $2T$ being given in part (b), it was not uncommon for candidates to use two independent times T_1 and T_2.

In part (c), candidates found difficulty in constructing a suitable model, with $2T + T_1 + T_2 + B$ or similar quite often appearing.

Question 5

Candidates found part (a)(i) to be straightforward apart from those who relied completely on their calculators and so had no means of 'showing' that the answer given was correct. Part (a)(ii) caused more problems, with 'because the lengths are in millimetres' being a common answer, rather than the fact that because all the lengths were in the 130s, three significant figures were effectively reduced to one significant figure.

Part (b) was designed to probe common misconceptions about confidence intervals. Unfortunately, only a small minority of candidates gave convincing answers.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA Website.