LEVEL 3 CERTIFICATE
MATHEMATICAL STUDIES

1350/2B Paper 2B Critical path and risk analysis
Report on the Examination

General

Most parts of the paper were accessible to the majority of students, with fewer students than last year failing to attempt parts of questions.

The mean mark was marginally down on last year and there were fewer very high and very low marks

Students did well on questions requiring calculations in a reasonably straightforward context, for example 1(b) and 4(c). They also made good attempts at questions involving interpretation and explanation, such as 1(a), 2(c) and 5(c).

The questions which proved the most challenging were those where the methods were not immediately obvious. In 2(b), students had to extract the relevant data from an extended text and then carry out the correct calculations. In question 6, there was no indication of how to approach the question, which caused difficulties for some students. However, it is appropriate for this qualification that there should be some unstructured questions such as these, which require students to plan their solutions from the start.

Written communication was generally of quite a high standard, and the vast majority of students showed their working clearly when carrying out calculations.

Question 1

Part (a) was answered well, with many students gaining full marks. It was acceptable for the improvements to relate to the errors or for them to be independent of the errors. Some answers, such as "Name the operator" were acceptable as improvements, but not as errors.

Part (b) was done very well. A few students erred by using 12 months or 23 months instead of 24, or by not adding the £109.99. Some students did not use a calculator, and many of these failed to gain the final accuracy mark.

Question 2

This required careful study of the question and the preliminary material, and students did not score very highly, with only a minority correctly answering part (a).

In part (b), although the phrase "unemployment rate" occurs in the text of the preliminary material, many students worked with the actual figures instead. Those who, correctly for this approach, divided the change by 764 000 rather than 628 000 were still able to gain 2 marks out of 3.

In order to gain any marks in the *Dynamic Youth* section, students had to divide 362 000 by 0.152 (or equivalent) and 265 000 by 0.121(or equivalent). Many did not get this far. Those who did, and then calculated the ratio of the results of these calculations, were able to gain full marks.

Unfortunately, some students overcomplicated things by subtracting the numbers of unemployed from the totals of the economically active before calculating the ratio. It appears that some students found it difficult to disentangle the meanings of the different categories, such as employed, unemployed and economically active.

In part (c), the majority of students gained some marks, but only a small proportion got all 3 marks. Credit was only given for points which were on the mark scheme. General statements such as "It should be easier to read" did not gain marks.

A number of students suggested improvements to the statements from the *Always Young* and *Dynamic Youth* newsletters, rather than the briefing paper itself. These gained no marks.

Question 3

Part (a) was done very well, with the majority of students scoring 6 or 7 marks. The most common error was in the latest finish time for activity D. It might help students in the future to be aware that if there are two activities following on like D and F, it is not possible for one to be critical and the other to have a non-zero float.

Most students answered part (b) correctly. Some students stated the duration of the critical path rather than listing the tasks that make up the critical path.

Most students also answered part (c) correctly; a few were awarded a follow-through mark from incorrect values on their diagram.

Nearly all scored some marks in part (d). Some of those who had given an incorrect latest finish time for D in part (a) repeated the error here by not giving D a float, and they were therefore unable to get full marks. Other students dropped a mark by not labelling the horizontal axis "Days".

Student who chose awkward scales such as five days being represented by four large squares invariably plotted at least one task inaccurately and so lost one or more marks.

Question 4

Almost all students got at least one mark in part (a) by putting the number 1 at the centre of the Venn diagram. Of these, a sizeable proportion gained no more marks, indicating a lack of understanding of Venn diagrams with three sets. Those who got further generally went on to answer completely correctly.

Part (b) was tackled well, with many students gaining both marks, some by follow-through from an incorrect Venn diagram.

Some students seemed to misunderstand the question in part (c) and incorrectly divided by 250.

Question 5

Most students interpreted the data effectively to get part (a) completely correct.

Part (b) was challenging for many students, requiring them to relate the words in the question to the given data in a precise way. Some got as far as calculating that 8% of the population are non-smokers who get the disease and then adding this to their 4.4% from 5(a), thus gaining 3 marks, but relatively few students went on to a completely correct solution.

Part (c) really tested students' understanding of this type of statement. They needed to refer to their answer to 5(b) for statement 1, and to the values of 10% and 22% for statement 2. Some students mistakenly assumed that they could refer to the same numbers for each statement.

Nearly half the students got part (d) right. If they saw in 5(b) that statement 1 was incorrect but statement 2 was correct, they could infer the correct answer to this question.

Question 6

This was a challenging question, with a fair proportion of students scoring no marks. Many of these students wrote a lengthy discussion of the situation, but performed no calculations. Those who did perform some calculations often gained at least 1 mark, usually for stating, or implying, that the probability of Soares not getting a serious injury was 0.6.

In order to gain more than this mark students needed to calculate either an expected value or a combined probability. Several students successfully used a tree diagram to find the relevant combined probabilities, but some stopped there and did not find any expected values.

This was a difficult question for students to structure. Some of those who did not start by considering the separate cases of "signing Morris" and "not signing Morris" got rather confused as to how to proceed. A possible tip for addressing this sort of question in the future would be to look at the final sentence. This suggests that finding the expected costs if the club signs Morris, and the expected costs if the club does not sign Morris, is a reasonable way to proceed.

Use of statistics

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

Mark Ranges and Award of Grades

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