



## EXAMINER'S REPORT

AUGUST 2003

### LOGISTICS MANAGEMENT

#### General Comments

The aim this course, and the way this exam is structured, is to encourage the student to study first the theory, then the techniques, and finally how the ideas are applied in practice. Ideally people should look at the cases early on to get an idea of the types of problems which occur. These are mixtures of marketing, logistics, mathematics and strategy. Then one should get into the theory. Basically I expect a clear understanding of what is in the text and some practical illustrations from outside, such as from Irish applications. The middle part of the year should be spent on the quantitative techniques, hopefully linking them into the cases and the theory, with some anecdotes about Irish companies where appropriate.

People can get through by focusing on one of the parts, but this year there were few instances of full marks for a question. Consequently, people who failed invariably did one or two sections very poorly, or even left out one of them, and were not able to compensate from the other sections. It is safer to prepare all the sections.

The case questions are geared to bring one through a process of analysis, evaluation, diagnosis and prognosis. This appears to work very well.

The theory sections on the syllabus match the sections of the book by Martin Christopher. Here I want answers to relate specifically to the question. General and vague answers, such as to Question 2 on the measurement of the profitability of shelf-space, were a clear indication that these students had not read the text.

#### Quantitative questions

Firstly, before I get into specifics, there is no need to do roughwork and then write your answer out neatly. It wastes your precious time. Do the question as best you can. If you think you are making a mistake say so, and try to correct the mistake. If you blank out, just leave two pages so that you can move onto other questions. Maybe later you will be able to do the rest of that question. Do not waste your time doing restarts.

The idea of having two different quantitative sections is to separate the less standard from the standard, the unstructured from the straightforward application of algorithms.

Section C contained a **simulation** question. Most people got the first part right, getting the intervals correctly to run from 00 to 99. The main point was that one should simulate the number of cars

rented out for each day. The weaknesses of the method were the small sample of data and the small simulation run.

The other Section C question was on **stock (inventory) control**. This is a long section in the text and likely to occur every year. I was very surprised that some did not get the economic order quantity of 100 units, 6 orders a year, and an annual stock related cost of £96. From this the selling price of a box was  $(£4.80 + £96/600)$  by 1.5 (50% mark-up) = £7.44 or 62p per ball. I expected this at a minimum and then a lot of practical calculations afterwards. I see this as a final year Graduateship subject which is used to demonstrate that graduates can develop practice in marketing decision making, which includes becoming adept at calculating costs and discounts. I was hoping for some good common business sense in the answer. You should not give to the clubs a discount based on the full saving in selling or storage costs. You should be able to do better than that! And, there are other factors such as not wanting the business to go over to the club entirely.

The first question in Section D was a standard application of **graphical linear programming**. This is a difficult section and will continue to figure prominently in exams. It is not a simple method; one must develop an understanding of the technique. But, if one does, it gives a great way to visualise profitability in the context of resource limitations in management. The basics are straightforward. 1. Develop the constraints. 2. Draw the graph. 3. Find the corners most likely to be best. 4. Put these into the objective function to get the best one. The main issue is that, compared to Ireland, sales to Great Britain were more profitable, required less marketing effort, but used a lot more logistics effort. This means that, while a mix of sales to both gives the best combination, putting more effort into Great Britain is more sensible.

It also means that the sales limit of 800 packages on the Irish market is never exploited. Consequently, increasing the market capacity by reducing the price in the Irish market makes no sense. Furthermore, even if the optimal mix involved selling to full capacity in the Irish market, reducing the price would have to have been accompanied by a reduction in the high number of marketing hours required to sell the product in Ireland. Someone with a practical mind should have seen these points.

The **assignment** question is an example of a standard application of an algorithm that many people got mainly right. This is a cut-down version of the transport problem, which itself is a cut-down version of linear programming. Hence its rules are somewhat simple and yet strange. To identify if one has a solution one tries to cover all the zeros in the tableau with the minimum number of lines. If this is less than the number of people to be assigned one must do another iteration. The book is slightly long-winded about what to do next. One takes the lowest uncovered element and subtracts it from all the uncovered elements. Also one adds it to all the twice-covered elements.

I included a second part in which one of the people could not be allocated. This caused problems with people who tried to apply the steps of the algorithm without understanding it. It required putting a zero or a very large number such as 100 for the column under Eoin and re-solving. The overall standard was quite good and it was obvious that the lecturers throughout all the centres had done a very good job in the case and theory aspects, and on some of the quantitative questions, and that many students who failed in the summer got down to work for the repeats.