



## Graduateship in Marketing - Stage 4

### LOGISTICS MANAGEMENT

**FRIDAY, MAY 13, 2005. TIME: 9.30 am - 12.30 pm**

Please answer the question in Section A, and **ONE** question from each of Sections B, C and D.

(If more than the specified number of questions in Sections B, C and D are attempted, delete those questions you do not wish to have marked. Otherwise the examiner will mark the **FIRST** question in Sections B, C and D.)

Section A carries **40%** of the marks. All other questions carry equal marks.

Do **NOT** repeat questions in the answers, but show clearly the number of the question attempted on the appropriate page of the Answer Book.

**(Note: Marks are awarded for the relevant use of contemporary Irish and international examples of marketing practice)**

#### SECTION A (40%)

1. **Case: Benetton**

- (a) Outline the characteristics of the U.S. knitwear market that differentiate it from the European market, and how these might influence the way that Benetton should plan to manage its logistics in the United States.
- (b) Review the main issues concerning the development of the U.S. market.
- (c) Suggest, with supporting reasons, an appropriate retailing strategy for Benetton to use in the United States.
- (d) Propose and justify a plan that describes how Benetton's sales in the new U.S. market should be supported operationally.

You may assume that the company has a target of 200 retail outlets to be opened per annum during its first five years in the United States of America.

#### SECTION B (20%)

2. *"In the new market-place there is a strong case for arguing that individual companies no longer compete with other stand-alone companies, but rather that supply chain now competes against supply chain."*

Martin Christopher

Explain the rationale for this viewpoint, giving illustrations where this is the case. Discuss its consequences for companies in the future.

3. Assess the implications of serving customers on a global basis.

**P.T.O.**

## SECTION C (20%)

4. Demand for tins of dilutable orange in a supermarket is usually about 200 trays a month. Ordering costs are €100 per order and the basic unit price is €20 per tray. Carrying costs are 30% per month.
- (a) Based on the above information, determine the optimum number of trays of tins of orange that the supermarket should order at a time, the number of orders that should be made per month, and the total inventory costs.
- (b) Discounts are available as follows:
- |              |           |
|--------------|-----------|
| 120 to 159   | less 1.0% |
| 160 to 199   | less 2.0% |
| 200 and over | less 4.0% |
- What is the most economical quantity to order?
- (c) There is the possibility that the basic unit price of €20 per tray might increase significantly in the near future. If this happens, should the supermarket reconsider its policy about discounts, and, if so, in what way?
5. A video rental shop has collected data from 25 hours randomly selected over the past month on the demand per hour for videos. The data are shown summarised below:

|                 |    |    |    |     |     |            |
|-----------------|----|----|----|-----|-----|------------|
| Rental Demand   | 70 | 80 | 90 | 100 | 110 |            |
| Number of hours | 2  | 5  | 8  | 7   | 3   | Total = 25 |

The current staff policy is to employ only one assistant to deal with customers. Part of the collection of data involved the researcher posing as a customer and observing the behaviour of customers. It was clear that the assistant could not handle any more than 90 customers an hour. Management are concerned about the effect on lost customers of a queue build-up over an evening, which usually lasts five hours.

- (a) Use the following five random numbers between 00 and 99 to simulate five hours of demand for the video rental shop: 85 48 71 56 90. How many rentals does the simulation indicate will be lost due to a shortage of staff?
- (b) What does the simulation indicate would be the average number of videos rented for the five hour evening? How does this compare with an expected daily demand as calculated using a probability distribution based on the above data?
- (c) Discuss the procedure you have used, its weaknesses and how to resolve them, if any.

### SECTION D (20%)

6. Forty Shades Ltd. produces two lawn fertilizers GreenGrow and EverGreen each of which is a blend of two raw materials N4 and K5. During the current production period 900 kilos of N4 and 400 kilos of K5 are available. Each kilo of GreenGrow uses  $\frac{3}{5}$  of a kilo of N4 and  $\frac{2}{5}$  of a kilo of K5. Each kilo of EverGreen uses  $\frac{3}{4}$  of a kilo of N4 and  $\frac{1}{4}$  of a kilo of K5. In addition, a current limit on the availability of packaging materials restricts the production of EverGreen to a maximum of 500 kilos.
- (a) If the profit contribution for both products is €6 per kilo, how many kilos of each product should Forty Shades manufacture?
- (b) Should it be a concern to Forty Shades that the limited availability of packaging materials is restricting the production of EverGreen? What should happen to the production quantities and the projected profit if the firm were able to remove the restriction on the amount of EverGreen that could be produced?
- (c) If the packaging restriction on EverGreen were removed it opens the further possibility of justifying an advertising programme that could help to support an increase in the profit contribution for EverGreen to €8. How might this affect the optimal production quantities? Comment on the advisability of such an advertising programme.

**P.T.O.**

7. A Sales Manager is in charge of planning and coordinating the annual training programme for his company. The following table shows the tasks involved, the immediately preceding tasks, and for each task the most likely estimate, the optimistic estimate and the pessimistic estimate.

| Task                             | Preceding tasks | Duration in Days |                |                 |
|----------------------------------|-----------------|------------------|----------------|-----------------|
|                                  |                 | Most likely (m)  | Optimistic (a) | Pessimistic (b) |
| A Plan topic                     | -               | 2                | 1.5            | 2.5             |
| B Obtain speakers                | A               | 2.5              | 2              | 6               |
| C List meeting locations         | -               | 2                | 1              | 3               |
| D Select location                | C               | 2                | 1.5            | 2.5             |
| E Finalise speaker travel plans  | B,D             | 1                | 0.5            | 1.5             |
| F Make final check with speakers | E               | 2                | 1              | 3               |
| G Prepare and mail brochures     | B,D             | 3.5              | 3              | 7               |
| H Take reservations              | G               | 4                | 3              | 5               |
| I Handle last-minute details     | F,H             | 2                | 1.5            | 2.5             |

Using the Project Evaluation Review Technique (PERT) the mean time,  $\mu$ , and the standard deviation,  $\sigma$ , for the duration of each task are estimated from the most likely (m), optimistic (a) and pessimistic (b) estimates by using the formulae:

$$\mu = (4m + a + b) / 6 \qquad \sigma = (b - a) / 6$$

- For each task find the mean and standard deviation.
- Draw a network for this survey and use the mean times to find the critical path.
- Determine the mean and standard deviation of the critical path duration.
- If the sales manager wants a 0.99 probability of completing the project on time, how far ahead of the scheduled meeting date should he begin working on the project?  
State any assumptions that you make.

(This question requires statistical tables for the Normal Distribution.)