



Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, 25TH AUGUST 2000. TIME: 2.00 pm - 5.00 pm

Please attempt **FIVE** questions.

(If more than the specified number of questions are attempted, delete those you do not wish to have marked. Otherwise the Examiner will mark the **FIRST** five questions in your Answer Book).

All questions carry equal marks.

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

1. (a) A research agency wishes to estimate the use of DVD technology within the population at a 99% confidence level with a precision of plus or minus 2%. What size of simple random sample should be chosen if previous research showed that no more than 15% of the population are likely to be users at present? (10 marks)
- (b) Set out a procedure for selecting a stratified random sample of grocery stores in Ireland. It is desired that types of outlets (multiples, symbol groups and independents) should be represented in your sample. List the information that would be required and state how you would proceed. (10 marks)

P.T.O.

2. House prices in a rural estate agency showed the following pattern.

Selling Price (£ Thousands)	Number of Houses
50 to under 75	3
75 to under 100	6
100 to under 125	9
125 to under 150	26
150 to under 175	33
175 to under 200	40
200 to under 300	14
300 to under 400	13
400 to under 500	4
500 to under 900	2
900 and over	none

- (a) Draw a histogram of these findings. (5 marks)
- (b) Calculate the arithmetic mean and the standard deviation. (10 marks)
- (c) A stratified random sample is chosen. The ABC1 stratum comprises 29% of the population and 80% of this group had phones. The C2DE segment accounts for 50% of the population and 50% of them had phones. The farming segment was the final group in the sample and of these 60% had phones. Calculate the level of phone ownership overall. (5 marks)
3. (a) Calculate relevant indices and write a short report on the relative wages paid to males and females from 1987- 1999.

Year	Average Hourly Earnings - Males	Average Hourly Earnings - Females
	£	£
1987	5.25	3.53
1989	5.75	3.88
1991	6.29	4.27
1993	6.94	4.85
1995	7.27	5.16
1997	7.58	5.53
1999	8.32	6.07

- (10 marks)
- (b) Describe in detail how the Consumer Price Index is calculated by the CSO in Ireland, indicating the problems involved. (10 marks)
4. Quarterly data shows the pattern of sales in hundreds of £' of a particular business.

1995	2396	8710	4444	4259
1996	2131	7508	3837	4234
1997	2002	7145	3536	3870
1998	1999	7397	2893	3186
1999	1607	6263	2461	2478

- (a) Graph the data. (5 marks)
- (b) Calculate the trend and the average seasonal variation. (10 marks)
- (c) Calculate a forecast for each quarter of 2000. (5 marks)
5. The sales in hundreds of airflights to London (Y) and their prices (X) are shown in the table below.
- | | | | | | | | | | | |
|---------------------|-----|-----|-----|----|----|----|-----|-----|-----|----|
| X (£) | 125 | 170 | 190 | 30 | 70 | 85 | 190 | 130 | 150 | 95 |
| Y (hundreds) | 55 | 20 | 15 | 95 | 75 | 90 | 25 | 60 | 50 | 60 |
- (a) Construct a scatter diagram. (5 marks)
- (b) Calculate the value of the correlation coefficient. (10 marks)
- (c) What percent of the variation in flight sales is explained by a knowledge of the variation in price? (5 marks)
6. (a) The chances of a company winning 3 forthcoming contracts are 0.6, 0.5 and 0.2 respectively. What is the probability that they win more than 1 contract, if the contracts are independent of one another? (5 marks)
- (b) If tax bills for PAYE taxpayers are normally distributed with a mean of £10,000 and a standard deviation of £5,000, what percent of this population have bills between £13,000 and £15,000? (5 marks)
- (c) If tourist buses arrive at the Millennium Dome according to a Poisson distribution at an average rate of 3 per hour, what is the probability that in any particular hour more than 3 buses will arrive? (5 marks)
- (d) A committee of three officers is to be chosen from a group of 9 elected members. What is the total number of different committees that can be selected, if account is paid to who is appointed as President, Secretary and Treasurer? (5 marks)
- P.T.O.**
7. (a) It was claimed that at least 30% of customers preferred a particular brand. In order to test this hypothesis a sample of 400 customers were

queried. One hundred and four stated that they preferred the brand. Test the hypothesis at the 5% and 1% significance levels.

(10 marks)

- (b) In a random survey of 15 households, it was found that the mean expenditure on car purchase was £8,500 with a standard deviation of £2,500. In a second area, another small sample of 13 households showed a comparable mean at £10,000 with a standard deviation of £3,500. Is this a statistically significant difference? Test at the 5% level.

(10 marks)

8. Design a research programme to investigate purchasing behaviour with regard to music and attitudes to music stores in Ireland.

(20 marks)