



Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, AUGUST 24, 2001. 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 motor insurance company is considering discounts for those who never drink alcohol and needs to estimate the percentage of such drivers among the Irish population of over 1.9 million drivers. How large a simple random sample needs to be taken in order to provide 99% confidence that the population estimate will have a precision of $\pm 1\%$? (10 marks)
 - (b) A client has been informed that in a random sample of adults from a population of 2.6 million, 30% intended to purchase mobile phones in the next two years. This survey estimate was reported to have a precision of $\pm 2.5\%$ at 90% confidence. Based on this information, calculate the sample size used. (10 marks)
2. In 1996 the Irish population was distributed as follows

Age Group	Persons	
0 – 14	859,424	
15 – 19	339,536	
20 – 24	293,354	
25 – 44	1,016,091	
45 – 54	412,047	
55 – 59	153,807	
60 – 64	137,946	
65 years and over	413,882	Source: CSO

- (a) Draw a pie chart to show the age distribution of the population. (5 marks)
- (b) Calculate the mean. (5 marks)
- (c) Calculate the standard deviation. (5 marks)
- (d) Estimate the median age of the population using a cumulative frequency curve or otherwise. (5 marks)

P.T.O.

3. (a) The Consumer Price Index in Ruritania (Base Nov. 1996 = 100) shows values as follows:

Nov 1986	Nov 1987	Nov 1998	Nov 1999	Nov 2000
129.7	134.3	138.2	141.2	145.9

The index was reorganised so that November 1998 = 100. Calculate the value of the new index for Nov 1999 and November 2000. (5 marks)

- (b) What level of annual inflation would have been reported in November 2000? (5 marks)
- (c) Calculate relevant indices and write a short report on the relative wages paid to males and females from 1988- 2000.

Year	Average weekly Earnings - Females	Average weekly Earnings - Males
	£	£
1988	138	210
1990	155	230
1992	171	258
1994	194	279
1996	207	293
1998	222	304
2000	247	341

(10 Marks)

4. Quarterly data (IR shows the decline in sales in a firm).

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1996	Unavailable	7821	6645	5265
1997	4213	6510	5837	5243
1998	4002	6197	5536	4870
1999	2899	5354	4893	4186
2000	2604	5230	4261	

- (a) Graph the data. (5 marks)
- (b) Calculate the trend. (10 marks)
- (c) Use the data to forecast the sales expected in 2001. (5 marks)

5. The marks obtained for assessment of course work throughout the year were compared with the end of year examination marks for a number of students.

End of Year Exam mark	43	30	47	56	80	35	100	75
Continuous Assessment	55	37	58	70	90	30	95	94

- (a) Draw a scatter diagram. (5 marks)
- (b) What is the correlation between the end of year exam and the course work? (10 marks)
- (c) If one were to know that a particular student obtained 80 for continuous assessment, what is your estimate of the mark s/he might gain for the end of year exam? (5 marks)
6. (a) Text messages arrive onto a particular mobile phone on average at 3 per hour in a Poisson distribution during weekend evenings. What is the probability that in a given hour more than 2 messages arrive? (5 marks)
- (b) Suppose 5 brands of coffee are being taste-tested by 4 evaluators in order to find which is best. If there is no difference in the taste of the five brands, what is the chances that any one brand will be selected as best by all four evaluators? (5 marks)
- (c) An examiner in business studies noted that the graph of exam marks was normally distributed with a mean of 50 and a standard deviation of 15. The top 10% of candidates were awarded an A grade. What is the minimum marks that a student would have to get in order to achieve an A grade? (5 marks)
- (d) In a forecasting study 1200 individuals were asked whether or not they intended to buy a new car in the year 2000. Three hundred indicated that they had such plans. At the end of the year the entire sample was again contacted to investigate the reliability of the forecast. It was discovered that 400 had made a purchase, although only 250 of them had indicated such an intention in the previous survey. What is the probability that a random person selected from the study correctly indicated his or her intentions? (5 marks)

P.T.O.

7. (a) It was reported that 15 years ago an equal proportion of students entered college for the various areas of study – Arts, Science Engineering and Management. Recent statistics showed that a sample of student entries were as follows:

Arts	Science	Engineering	Management
500	440	400	540

Using 5% level of statistical significance, test the hypothesis that entry patterns are unchanged. (10 marks)

- (b) In a random survey it was found that 30 out of 200 households in one area used an internet grocery shopping service and in a second area another random sample of 150 households showed that 15 used such a service. Is this a statistically significant difference? Test at the 5% level. (10 marks)

8. Design a research programme to investigate the behaviour and attitudes of Irish consumers regarding their consumption of beef.