



## Foundation Certificate in Marketing - Stage 1

### MARKETING INFORMATION ANALYSIS I

FRIDAY, MAY 19, 2006. 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) Suppose that the proportion of first preferences gained by a political party in an opinion poll was 48%. If the sample of 750 voters was conducted using probability sampling, what conclusions might be drawn regarding the proportion of first preferences in the population at the 95% level of confidence, according to the survey. (5 marks)
- (b) What exactly do researchers mean when they say that “the 95% confidence interval for the population proportion is 40% plus or minus 3%”? (5 marks)
- (c) How might an interlocking quota sample of 1,000 respondents be chosen if it is known that the population structure is as follows?

<b>Gender</b>		<b>Age</b>	
<i>Male</i>	<i>Female</i>	<i>15-34 years</i>	<i>35 and over</i>
50%	50%	43%	57%

  

<b>Region (in thousands)</b>			
<i>Dublin</i>	<i>Rest of Leinster</i>	<i>Munster</i>	<i>Connacht/Ulster</i>
826	647	789	505

(10 marks)

**P.T.O.**

2. The following data relate to the incomes of a random sample of managers in €000.

26	46	23	39	47	50	60	71	53	80
37	22	56	65	54	40	87	57	39	30
33	18	42	59	24	26	22	25	42	54
24	19	46	46	20	43	25	49	57	43
22	53	37	59	33	54	26	31	59	32
36	48	70	39	50	68	34	41	35	58
19	31	51	25	68	71	32	73	34	41
48	26	48	35	81	32	24	39	58	16
66	63	54	53	38	23	52	62	50	58

- (a) Show the income distribution in a histogram. (5 marks)
- (b) Calculate the mean for the sample. (5 marks)
- (c) Calculate the standard deviation for the sample. (5 marks)
- (d) Calculate a 90% confidence interval for the population mean. (5 marks)

3. The value of the Consumer Price Index (Base Nov 1996=100) is reported as

Year	Q1	Q2	Q3	Q4
2003	107.8	110.1	111.7	113.3
2004	113.5	116.1	116.8	117.6
2005	118.8	121.5	122.0	123.3

- (a) If a contract states that my lease payments will be index linked and I paid €1,500 in Q1 of 2003, how much should I pay in Q1 of 2006 if the Consumer Price Index at that date was reported at 126.4. (10 marks)
- (b) Calculate the value of an Overall Price Index for a product, which has 5 constituent parts. The prices of these constituents and the weighting of each in the product formulation are listed below.

Constituent Part	Price 2005	Price 1995	Quantity
A	€20	€28	40 units
B	€15	€19	28 units
C	€40	€50	12 units
D	€90	€120	16 units
E	€12	€18	4 units

If the value of the Index in 1995 was 113 (base 1990=100), what is its value in 2005? (10 marks)

4. The sales figures (in €thousands) of a company have been in decline.

	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
2003	449	480	434	415
2004	401	459	422	390
2005	403	441	416	

- (a) Graph the data. (5 marks)
- (b) Calculate the trend and seasonal variation. (10 marks)
- (c) What is the forecast for sales in each quarter of 2006. (5 marks)

5. An accountant found the following data for the total production costs Y (Euro in thousands) and X (the number of units produced).

<b>Y</b>	500	330	340	501	444	403	379	300	397
<b>X</b>	25	13	16	24	27	21	14	12	22

You are required

- (a) To plot a scatter diagram of Y against X. (5 marks)
  - (b) What is the value of the correlation coefficient? (10 marks)
  - (c) What percent of the variation in Y is explained through one's knowledge of the variation in X? (5 marks)
6. (a) A firm has submitted proposals for three contracts A, B and C which are independently awarded. If the chances of success are 50%, 30% and 40% respectively, what is the probability that the firm will be awarded only one of these contracts? (5 marks)
- (b) Thirty percent of a product is made on machine A, which has a defective rate of 3%. The remaining product is made on an older machine B, which has a defective rate of 4%. If a defective product is found at the inspection stage, calculate the chances that it came from machine A. (5 marks)
- (c) Suppose that credit card bills are normally distributed with a mean of €1,200 and a standard deviation of €400. If the heavy user segment is defined to be the top 30% of customers, what is the minimum level of bill that would be included in this segment? (5 marks)
- (d) Overloads of a computer network follow a Poisson distribution with an average of 1 incident per month. What is the likelihood that on any particular month more than 2 overloads will occur? (5 marks)

**P.T.O.**

7. (a) In a small sample of 18 households in Limerick, it was found that spending on Internet purchases was €400 per household on average with a standard deviation of €100. In Dublin, another small sample of 15 households showed the average spend to be €320 with a standard deviation of €50. Use a suitable hypothesis test to draw your conclusions. (10 marks)
- (b) A recent report contains the following data.

<b>Age Group</b>	<b>Method of Mobile Phone Bill Payment</b>	
	<b>Bill</b>	<b>Prepaid</b>
8-14	30	88
15-24	80	180
25 and over	240	232

Conduct a formal hypothesis test to determine whether or not these figures indicate a statistically significant difference in behaviour across age groups. (10 marks)

8. Describe fully how a research investigation might be conducted on how those who have SSIA accounts intend to use the varying level of funds they will have accumulated. (20 marks)