



## Foundation Certificate in Marketing - Stage 1

### MARKETING INFORMATION ANALYSIS I

FRIDAY, MAY 4, 2007. 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) Previous evidence showed that household expenditure on transport was normally distributed with a mean of €50 per week with a standard deviation of €20. A new sample survey is envisaged for Summer 2007. The research planners wish that the mean expenditure will be calculated within  $\pm$  €1 of the true population figure. Assuming a 95% confidence level, calculate the size of simple random sample required to meet this condition. (10 marks)
- (b) The Consumers' Association wishes to undertake a study into customer attitudes to genetically modified food products. Show the breakdown of interviews required for a quota sample of size 2000 if the following interlocking quota controls are to be used:

GENDER		AGE		STATUS	
Male	Female	Under 35	35 and Over	No Children	Has Children
50%	50%	40%	60%	30%	70%

(10 marks)

**P.T.O.**

2. (a) Four of the best selling laptops in a manufacturer's range were priced as follows:

A	B	C	D
€690	€1,059	€1,895	€1,259

While the exact numbers sold were not known exactly, it was known that A, B and C had the same level of sales while sales of the best selling model D were exactly twice the level of each of the others. What is the mean price per laptop in these circumstances? (5 marks)

- (b) Weekly travel bills (to the nearest €) are monitored in a simple random sample of households.

48	69	103	51	94	85	91	37	49	58
90	52	117	78	47	62	53	97	47	82
58	85	90	76	72	71	48	113	113	65
141	49	46	75	123	68	44	68	109	67
95	63	50	54	130	43	87	66	123	47
38	39	83	51	114	55	91	57	99	58

Construct a frequency table and present the data in a histogram. (5 marks)

- (c) Using the frequency table, calculate the Arithmetic Mean. (5 marks)
- (d) Calculate the Standard Deviation using the frequency table. (5 marks)

3. (a) What is the difference between the Laspeyres and Paasche methods of calculating an overall Price Index? Which do you consider to be most useful in practice? Why? (5 marks)

- (b) Calculate the value of a Laspeyres 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 1999	Price 2006	Quantity 1999	Quantity 2006
A	€31	€33	4	5
B	€16	€19	7	6
C	€5	€70	12	15
D	€5	€120	6	6
E	€10	€8	3	2

If the value of the Index in 1999 was 106 (Base 1996=100), what is its value in 2006? (10 marks)

- (c) What is the purchasing power of value of a Euro in May 2006 relative to a Euro in 1998 if the value of the Consumer Price Index in 1998 was 105.2

(base Nov. 1996 = 100) and its value was 129.9 in May 2006 (Base Nov. 1996 = 100). (5 marks)

4. Quarterly turnover of a central heating contractor's business was as follows:

Year	Q1	Q2	Q3	Q4
2003	2,673	2,184	2,777	4,349
2004	2,980	2,296	3,432	5,421
2005	3,125	2,876	4,262	6,452
2006	3,817	3,427	4,772	6,508
2007	4,100			

- (a) Calculate the trend. (5 marks)
- (b) Calculate the seasonal variation. (5 marks)
- (c) Calculate forecasts for the final three quarters of 2007. (5 marks)
- (d) Graph the original data together with the trend and the forecasts. (5 marks)

5. (a) Draw a scatter diagram of about 10 points to illustrate each of the following degrees of linear association (i) perfect positive correlation (ii)  $r = -0.9$  (4 marks)
- (b) The data below show the demand for a product (to the nearest hundred units) and its price (€) in six different market areas.

Demand (units)	Price (€)
1,900	155
2,300	157
1,900	160
1,600	188
1,700	176
1,500	123

Use a least squares regression line to predict the demand for the product based on a price of €170. (10 marks)

- (c) Eight attributes A – H of the client's product are ranked in importance from 1 to 8 by a representative group of male and female consumers. The results are shown below.

Attribute	A	B	C	D	E	F	G	H
Men	6	4	3	1	8	5	2	7
Women	5	4	2	3	7	6	1	8

Calculate the level of agreement between men and women in these judgements. (6 marks)

**P.T.O.**

6. (a) Suppose that if one does not pay parking fees in Cork the independent chance of being clamped is 0.25. What are the chances that none will be caught if 5 motorists independently take such a gamble? (5 marks)
- (b) It is known that a weight in a population of males is normally distributed with an unknown mean and standard deviation of 20 lbs. It is also known that 25% of the population weigh above 12 stone (168 lbs). Estimate the mean weight for this population to the nearest pound. (5 marks)
- (c) The Lotto in Ireland is played by picking 6 numbers out of 45. Calculate the odds that a player might pick the winning 6 numbers? (5 marks)
- (d) Contracts for Internet consultancy work were found to follow a Poisson distribution with a mean of 2 new contracts per month. What is the probability that in a given month only 1 new contract will occur? (5 marks)

7. (a) An SPSS analysis using the CROSSTABS command showed the following table of results.

**Have you ever made a purchase using the Internet?**

<b>AGE</b>	<b>Yes</b>	<b>No</b>
Under 25	300	200
25 - 44 years old	480	520
45 and over	220	480

Are age and purchasing on the Internet independent? Test at the 5% level of significance. (10 marks)

- (b) A small random sample of 12 Dublin shops showed average price for a particular model of mobile phone was €75.80 with a standard deviation of €10. In a sample of 14 outlets outside Dublin the average price for the same model was €79.00 with a standard deviation of €8. Test whether or not such a difference is statistically significant at the 1% level. (10 marks)
8. Design a research programme to investigate the experiences and attitudes of people to the health services in Ireland. (20 marks)