



Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, MAY 11, 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) Recent evidence showed that household expenditure on food was normally distributed with a mean of £50 per week. The standard deviation for that sample was thought to be about £20. A new sample survey is envisaged for Summer 2001. Management wishes that the mean expenditure will be calculated within $\pm£1$ of the true population figure. Assuming a 95% confidence level, calculate the size of a simple random sample that would be required to meet this condition. (10 marks)
- (b) The Consumers' Association wishes to undertake a study into genetically modified food products. Show the breakdown of interviews required for a quota sample of size 1400 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)

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

A	B	C	D
IR£890	IR£1659	IR£1995	IR£1259

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 that level. What is the mean price in these circumstances?

(5 marks)

P.T.O.

- (b) Weekly food bills (to the nearest IR£) 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 overall index numbers. 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 1995	Price 2001	Quantity 1995	Quantity 2001
A	£31	£33	4	5
B	£16	£19	7	6
C	£55	£70	12	15
D	£95	£120	6	6
E	£10	£8	3	2

If the value of the Index in 1995 was 106 (Base 1992=100), what is its value in 2001? (10 marks)

- (c) What is the purchasing power of IR£1 in May 2001 relative to IR£1 in 1998 if the value of the Consumer Price Index in 1998 was 105.2 (base Nov. 1996 = 100) and its value is 119.9 in May 2001 (Base Nov 1996 = 100)? (5 marks)

4. Quarterly turnover of a central heating contractor's business over the last 5 years was as follows:

Year	Q1	Q2	Q3	Q4
1996	2,673	2,184	2,777	4,349
1997	2,980	2,296	3,432	5,421
1998	3,125	2,876	4,262	6,452
1999	3,817	3,427	4,772	6,508
2000	4,100	3,612	5,613	

- (a) Calculate the trend. (5 marks)
- (b) Calculate the seasonal variation. (5 marks)
- (c) Calculate forecasts for each quarter of 2001. (5 marks)
- (d) Graph the original data and include on this graph both 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 (in thousands of units) and its price (£) in six different market areas.

Demand (000's units)	Price (£)
19	55
23	57
19	60
16	88
17	76
15	103

Use a least squares regression line to predict the demand for the product based on a price of £70. (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 Dublin the chance of being clamped is 0.3. If 5 motorists around the city do not pay parking fees, what are the chances that none will be clamped? (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 30% of the population have weights above 12 stone (168 lbs). Estimate the mean weight for this population to the nearest pound. (5 marks)
- (c) Six participants enter a contest. In how many ways can first, second and third prizes be awarded? (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 be achieved? (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?

AGE	Yes	No
Under 25	150	100
25-44 years old	240	260
45 and over	110	240

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 the average price for a particular model of mobile phone was £IR55.80 with a standard deviation of £IR10. In a sample of 10 outlets outside Dublin the average price for the same model was £IR58.90 with a standard deviation of £IR8. Test whether or not such a difference is statistically significant at the 1% level. (10 marks)
8. Design a research programme to investigate the behaviour and attitudes of Irish consumers regarding the disposal of their domestic garbage.