



**Foundation Certificate in Marketing - Stage 1**

**MARKETING INFORMATION ANALYSIS I**

**FRIDAY, AUGUST 23, 2002. 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 of 1,000 electors was 48%. If the sample was conducted using probability sampling, what conclusions might be drawn regarding the proportion of first preferences in the total population at the 95% level of confidence, according to the survey?
  
- (b) Set out a table showing the allocation by gender and by age (15-24, 25-44 and 45 and over) for a representative sample of 1200 people, given the population structure shown in the table below.

<b>POPULATION BY AGE</b>			
<b>1996 Population</b>		<b>Gender</b>	
<b>Age Group</b>	<b>Persons</b>	<b>Males</b>	<b>Females</b>
0-14	859,424	441,452	417,972
15-19	339,536	173,950	165,586
20-24	293,354	149,143	144,211
25-44	1,016,091	503,302	512,789
45-54	412,047	208,634	203,413
55-59	153,807	77,809	75,998
60-64	137,946	68,690	69,256
65 years. and over	413,882	177,252	236,630
<b>Total</b>	<b>3,626,087</b>	<b>1,800,232</b>	<b>1,825,855</b>

Source: CSO

**P.T.O.**

2. The following data relate to the earnings of a random sample of marketing personnel. [All values are to the nearest €1000]

26	46	23	39	47	50	60	41	53	50
37	22	56	55	44	40	45	57	39	30
33	15	42	39	24	26	22	25	42	24
24	15	46	46	20	43	25	39	57	43
22	23	37	29	33	54	29	31	59	32
36	38	40	39	50	68	34	41	35	38
17	31	31	25	38	41	22	33	34	41
48	26	48	35	31	32	24	39	58	16
66	63	54	53	38	23	52	62	50	58

- (a) Show the distribution of earnings in a histogram.
- (b) Calculate the mean for the sample.
- (c) Calculate the standard deviation for the sample.
- (d) What is the lower limit of a 95% confidence interval for the population mean?
3. (a) 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 1995	Price 2002	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 2002? (10 marks)

- (b) Describe how the Consumer Price Index is calculated, indicating the problems involved. (5 marks)
- (c) According to the latest Household Budget Survey, the average spending on food eaten away from home was €27.99 per household per week. In 1999-2000 when the survey was undertaken, the value of the Consumer Price Index was 104.8 (base 1996=100). The value of the index for January 2002 is 118.7. If these eating patterns have not changed, estimate the size of annual national market for eating out in January 2002, assuming that there are 1.2 million households in the country. (5 marks)

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

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
1998	unavailable	274	255	219
1999	249	280	234	215
2000	201	259	222	190
2001	203	241	216	188

- (a) Calculate the trend and the seasonal variation (10 marks)
- (b) Explain the meaning of the phrase 'seasonally adjusted data'. (5 marks)
- (c) Forecast sales for each quarter of 2002 (5 marks)

5. (a) Distinguish between correlation and regression. (5 marks)

(b) A researcher wishes to estimate turnover in a number of stores. Full data from co-operating stores are shown below.

<b>Annual turnover (€thousands)</b>	<b>Floor area ( Square metres)</b>
200	200
400	300
430	250
750	400
600	450
300	200

If it is known that two other similar stores have floor areas of 350 and 280 square metres, use regression to estimate the total turnover across the 8 stores. (10 marks)

(c) Draw a scatter diagram for the data in the table above. (5marks)

**P.T.O.**

6. (a) The time to assemble a product is found to be normally distributed with a mean of 5 minutes and a standard deviation of 1.2 minutes. In such circumstances, what proportion of assembly times are 6.5 minutes or more?
- (b) A company exploring for natural gas is drilling both in the Irish Sea and off the West Coast. If the independent probability of getting a commercial find off the West Coast is assessed at 0.6 and 0.25 in the Irish Sea, calculate the estimated probability that only one of the holes will provide a commercial find.
- (c) Demand for a particular item in a stockroom follows a Poisson distribution with an average of 3 items per day. What is the likelihood that this level of demand will be exceeded if only 2 items are put into stock each morning?
- (d) An employee can choose either to work on a fixed basis and get €45 for a day, or to sell the product on commission. Past experience shows that the sales are dependent on the weather and are likely to be €105 on a fine day, €40 on a cloudy day and €15 on a wet day. If the probabilities of each weather condition is 0.1, 0.6 and 0.3 respectively, use the expected value method to determine which payment method promises the best return.

7. (a) A market research survey was conducted on a random sample of drinkers. Each was asked to evaluate 5 different brands in blind taste tests. The normal professional standard of product testing was observed in each case. Each subject was then asked to pick the single brand that she or he preferred. The results were:

Brand preferred	<b>A-Plus</b>	<b>Brillo</b>	<b>Champ</b>	<b>Deadly</b>	<b>Excell</b>
Number preferring	88	105	104	94	109

Use an appropriate statistical test to interpret these results.

- (b) In a survey of rural schools, it was found that 350 out of a simple random sample of 500 under 15 year olds had a mobile phone. In urban schools, the result for the same age group was that only 125 out of 600 sampled did **not** have a mobile.

Is this a statistically significant difference? Test at the 1% level.

8. Describe fully how a research investigation might be conducted on the attitudes of Irish people to the euro.