Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, AUGUST 18, 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) A research director is examining the cost for a survey to estimate the proportion of adults who have travelled abroad within the past 12 months. It is envisaged that the costs of interviewing and data processing will amount to €5 per person, with fixed costs for the survey amounting to €1,200. If the total budget available is €15,000 and the proportion of travellers is unknown, what level of precision will attach to the population estimate at 99% confidence? It is presumed that simple random sampling will be adopted.(10 marks)

(b) The research director is also planning to measure the mean spending of these travellers, and again the costs of interviewing and data processing are estimated to be €5 per person, with fixed costs for the survey amounting to €1,200. If a simple random sample is to be used at 99% confidence level and a precision of $\pm$ €10 is required, what might be the total costs of this survey? Previous research showed that the mean spending was €475 with a standard deviation of €150. (10 marks)

P.T.O.

2. Given the population structure shown in the table below:

2004 Population	
Age Group	**Persons (000)**
0-14	843.2
15-19	300.8
20-24	338.7
25-44	1,233.8
45-54	495.8
55-64	381.6
65 years and over	450.8
Total	**4,044.7**

(a) Show the age distribution in a histogram. (5 marks)
(b) Calculate the mean age. (5 marks)
(c) Calculate the standard deviation. (5 marks)
(d) Select **either** a Z-chart or a Lorenz curve, show how it is constructed, sketch it and tell why it might be useful for business analysis. (5 marks)

3. (a) According to the latest Household Budget Survey, the average spending on food 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 June 2006 is 134.5.
If these eating patterns have not changed, estimate the size of the annual national market for eating out in June 2006, assuming that there are 1.5 million households in the country. (10 marks)

(b) The value of the Consumer Price Index (Base Nov 1996=100) is reported as follows:

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

What rate of annual inflation would be reported in Q3 of 2005? (5 marks)

(c) What would be the new value of the index in Q4 of 2005, if a new base of Q1 2004 =100 was organised? (5 marks)

4. Quarterly sales figures (in € thousands) of a company are shown below:

	Q1	Q2	Q3	Q4
2002	unavailable	832	600	668
2003	712	887	631	685
2004	784	911	654	732
2005	793	1034	755	799

(a) Use any method of your choice to 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 2006. (5 marks)

5. (a) A Sales Manager ranked staff from 1 = 'Best' to 10 = 'Worst' in terms of selling potential at the end of a training course. A year later the number of units sold by each person was recorded.

Salesperson	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Rank	7	4	2	6	1	10	3	5	9	8
Sales (units)	78	65	84	57	71	44	67	82	55	47

What is the correlation (if any) between the manager's assessment and sales results? (10 marks)

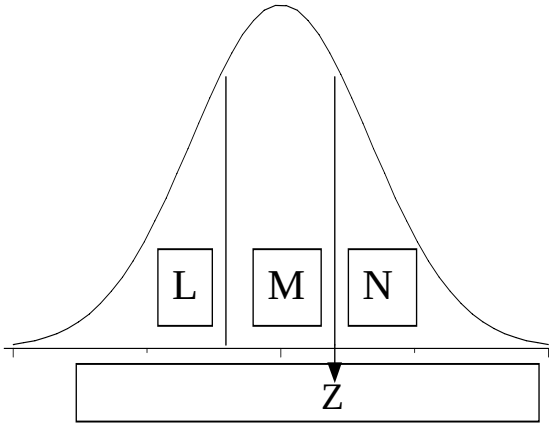
(b) A manager wishes to estimate ice-cream consumption and uses previous data showing consumption and average daily temperature.

Consumption (units millions)	**Average Daily Temperature (degrees C)**
200	10
400	16
430	18
750	24
600	22
300	15

Use a regression equation to estimate the consumption of ice-cream where the temperature is expected to be 20 degrees. (10 marks)

P.T.O.

6. (a) Areas L, M, and N under this Normal distribution are equal.
What is the value of the Z score that marks the division of M and N?
Give your answer correct to 2 decimal places. (5 marks)



(b) A recent major investigation which monitored new brands found a success rate of 45% in the FMCG sector (fast moving consumer goods). Suppose that 6 new brands were launched, what is the probability that at least 2 would succeed? Any success or failure is an independent event. (5 marks)

(c) Two kinds of hardwood, A and B are tested. While A has a probability of 0.8 of lasting more than 5 years without rotting, B only has a probability of 0.5 of lasting this length of time. What is the probability that neither of them will last 5 years? (5marks)

(d) Calls to a customer helpdesk follow a Poisson distribution with an average of 3 calls per hour. What is the likelihood that this level of demand will be exceeded in any hour? (5marks)

7. (a) A market research survey was conducted on a random sample of consumers. 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 most. The results were:

Brand preferred	**A-Plus**	**Brillo**	**Champ**	**Deadly**	**Excell**
Number preferring	186	210	208	188	218

Use an appropriate statistical test to interpret these results. (10 marks)

(b) In a survey of schools in country A, it was found that 150 out of a simple random sample of 400 had broadband. In country B and country C, the position was that 200 out of 600 sampled and 120 out of 200 respectively had the facility. Is this a statistically significant finding? Test at the 5% level. (10 marks)

8. (a) Draft guidelines to be followed in making a written market research report.
(10 marks)

(b) The table overleaf was produced by the Central Statistics Office in September 2005 and is based on the Labour Force Survey of 1994 and the Quarterly National Household Survey 2004.

(i) What percentage increase in the number of employees occurred from 1994 to 2004?

(ii) What percentage of employees were members of a trade union in 2004 relative to the percentage in 1994?

(iii) To what extent did Union Membership change over the 10 year period?

(iv) How much did the increase in females employees contribute to the overall increase in employees 1994-2004?

(v) Identify the age profile of 2004 union members in less than 100 words.
(10 marks)

It is **essential** to quote the relevant statistics in your answers.

P.T.O.

Table 2a Demographic profile of all employees classified by whether they are union members, LFS April 1994 and QNHS March-May 2004

Union membership '000

Demographic Profile	**1994** *Yes*	*No*	*Not stated*	*Total*	**2004** *Yes*	*No*	*Not stated*	*Total*
State	**432.9**	**481.7**	**30.4**	**945**	**521.4**	**910.5**	**75.3**	**1,507.10**
Region								
Border	46	48.8	2.2	97	53.3	88.3	5.7	147.4
Midland	21.1	25	1.2	47.3	31.1	50.2	1.5	82.8
West	30.1	40.5	2.8	73.4	42.2	86.5	6	134.8
Dublin	160.7	160.5	12.2	333.4	162.2	293.4	33.7	489.3
Mid-East	37.7	54.8	2.3	94.8	52.7	108.2	7.3	168.2
Mid-West	33	42.9	2.8	78.7	46.1	73	2.8	121.9
South-East	40.6	44.6	2.3	87.6	55.2	89.2	6.4	150.7
South-West	63.7	64.5	4.6	132.8	78.4	121.7	11.9	212
Sex								
Male	252.8	274	9.4	536.2	277.6	477.9	40.7	796.2
Female	180.1	207.7	21	408.8	243.8	432.6	34.5	710.9
Age Group								
15-19	9.1	28.9	7.5	45.5	4.9	52.6	3.1	60.5
20-24	52.5	102	5.4	159.9	46.9	156.5	12.2	215.7
25-34	141.1	155.1	5	301.2	136.4	300.2	25.2	461.8
35-44	119.1	97.2	5.6	221.9	146.3	191.7	15	353.1
45-54	75.5	64.7	4.9	145.1	126	133.5	12.2	271.7
55-59	22.6	17.8	1	41.4	40.3	45.4	4.9	90.6
60-64	11.7	11.5	0.7	24	18.2	22.4	2	42.6
65 +	1.3	4.5	*	6	2.3	8.1	0.8	11.2