Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, 5TH MAY 2000. 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)   Explain in detail how to pick a systematic sample of 250 students from a college which has 2000 students registered on its courses.

(5 marks)

   (b)   What additional information can be deduced when a statistic based on a simple random sample is quoted in a marketing report?

(5 marks)

   (c)   A marketing analyst takes a random sample of size 5000 from a database containing 350,000 active customers and finds that the average transaction per customer is £25 with a standard deviation of £8. Calculate a 95% confidence interval for the mean transaction value in the population.
   Also estimate the upper limit that should be put on the *total* value of transactions from the 350,000 customers.   (10 marks)

P.T.O.

2. The following data relate to travel bills in a sample of customer files in a travel agency.
[All values are reported to the nearest £IR10]

2600	2900	1410	1520	1800	590	440	1240	2760	580
550	2460	2550	2290	670	1970	1570	2220	850	1570
2750	1330	1750	1760	1770	810	1820	3180	2120	720
1390	2370	2670	1650	310	1370	1890	670	1360	1940
140	1450	3180	1390	2440	1520	1050	1660	1610	1060
1440	2470	1290	650	1730	2340	900	2370	490	1230
1380	180	1910	480	530	1620	510	2590	220	560

(a) Show the distribution of travel bills by means of a histogram.

(5 marks)

(b) Use a frequency table to calculate the arithmetic mean and the standard deviation

(10 marks)

(c) The mean expenditure on food of 4969 urban households was £70.13 per week and of 2,908 rural households was £71.82 according to the results of the Household Budget Survey 1994-95.
What is the overall mean expenditure on food for all households?

(5 marks)

3. (a) Calculate a Paasche Aggregative Index for 1999 with Base 1989 =100.

	Price 1989	Price 1999	Quantity 1989	Quantity 1999
Item A	£29	£37	48	44
Item B	£24	£30	32	35
Item C	£54	£62	28	26
Item D	£90	£95	26	27
Item E	£33	£38	16	18

(10 marks)

(b) Fran received a christening present of £10 in mid-July 1979. What amount would Fran's child, born in mid-July 1999, have to be given in order to receive comparable purchasing power?

Consumer Price Index.

Mid July 1979	= 330.3	Base (1968 = 100)
Mid November 1989	= 849.5	Base (1968 = 100)
Mid July 1999	= 123.4	Base (1989= 100)

(5 marks)

(c)   How is the monthly Consumer Price Index organised by the Central Statistics Office? (5 marks)

4.   The numbers of travellers from England to France in the month of June has been increasing as is demonstrated in the following data. (Statistics are presented in thousands of visitors).

1985	342	**1990**	456	**1995**	783
1986	459	**1991**	490	**1996**	992
1987	384	**1992**	507	**1997**	1047
1988	411	**1993**	549	**1998**	1298
1989	444	**1994**	651	**1999**	1463

(a)   Graph the data. (5 marks)
(b)   Calculate the trend. (10 marks)
(c)   Use the data to forecast the number of June travellers expected in 2000 and 2001. (5 marks)

5.   The following shows sales commission (y) achieved by telesales personnel in relation to their months of experience in the job (x).

Sales commission (£)	Months of experience
103	13
95	9
90	11
103	14
80	15
138	21
55	6
100	10
125	27

You are required to:
(a)   plot a scatter diagram of Y against X. (5 marks)
(b)   find the least squares regression of sales commission on experience and plot the line on the diagram. (10 marks)
(c)   calculate the percent of the variation in sales commission that is explained through one's knowledge of a person's experience. (5marks)

P.T.O.

6.   (a)   In the Irish National Lottery, would it be easier to correctly pick 7 numbers out of 35 rather than 6 out of 42, as at present? Calculate the odds in each case.   (5 marks)

      (b)   The check-in time at an airport is normally distributed with a mean of 4 minutes per party and a standard deviation of 1.5 minutes. What percent of parties take more than 6 minutes to check-in?   (5 marks)

      (c)   If the probability of a sale is 0.2 in any call, what is the probability that in 5 calls there will be more than 1 sale? Any success or failure is an independent event.   (5 marks)

      (d)   If the probability of a claim on the motor insurance policy of an under 25 year old girl is 0.003, what is the probability that in a sample of 1000 such policies there will be more than 1 claim?   (5 marks)

7.   (a)   The average delay in one customer service organisation was found to be 80 seconds with a standard deviation of 40 seconds, based on a random sample of 120 calls. In another organisation 150 random calls were monitored and the average delay was 70 seconds with a standard deviation of 40 seconds also. Using both the 5% and 1% levels of significance, test the hypothesis that delays in the two organisations are significantly different.   (10 marks)

      (b)   A market research survey on the home use of the Internet was conducted in a random sample of 1600 households and the following results were found. One hundred and seventy five out of 500 ABC1 households were linked to the Internet, as were one quarter of the 200 farm households. In the remaining C2DE households, 200 could also get on-line.

             (i)   What percentage of all households were linked to the Internet in the entire sample?   (2 marks)

             (ii)   Is there a statistically significant difference in Internet access between the social class groups at the 5% level? Use a formal chi-square test procedure to determine your answer.   (8 marks)

8. (a) The Reality of Aid Report 2000 published earlier this year shows the size of the aid budgets of selected western countries.

Overseas Aid as a Percentage of GDP

Portugal	0.25%	**Denmark**	0.99%
Spain	0.25%	**France**	0.41%
Sweden	0.10%	**Germany**	0.26%
Switzerland	0.33%	**Ireland**	0.31%
UK	0.27%	**Italy**	0.20%
Norway	0.91%	**Netherlands**	0.80%
USA	0.10%		

The UN target is 0.7 % of GDP. Present these data in a suitable table and chart showing the position of Ireland relative to other nations. Write a paragraph (4-5 sentences) to interpret the findings.

(10 marks)

(b) The table attached is from the Joint National Listenership Research 1998/9 conducted by the Market Research Bureau of Ireland (MRBI). Quote the relevant statistics in answering each of the following:

(i) What number of urban people were included in the sample?
(ii) Calculate the percentage of under 35-year old adults in the state.
(iii) Write a one sentence profile of those who bought a new car within the past 3 years.
(iv) According to the survey, what percentage of all ABC1 adults are in homes having two or more cars?
(v) Use the data to determine the percentage of under 35 years olds who have a car in their household. (10 marks)