Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, AUGUST 17, 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) Explain in detail how to pick a systematic sample of 350 students from a college which has 14,000 students registered on its courses. (5 marks)

   (b) A client has been informed that in a random sample of adults from a population of 2.6 million, 30% intended to purchase iPods in the next 6 months. This survey estimate was reported to have a precision of $\pm$2.5% at 90% confidence. Based on this information, calculate the sample size used. (10 marks)

   (c) What additional information can be deduced when a sample mean quoted in a research report has been based on a simple random sample? (5 marks)

2. The CSO reported in 2002 the Irish population was distributed as follows:

Age Group	Males	Females
0-14	424,044	403,384
15-19	160,413	152,775
20-24	165,292	163,042
25-44	588,308	591,951
45-54	241,566	238,881
55-59	99,827	97,467
60-64	77,559	76,693
65 years and over	189,155	246,846

   (a) Draw a histogram to show the age distribution of the total population. (5 marks)
   (b) Calculate the mean age of the population. (5 marks)
   (c) Calculate the standard deviation of the population. (10 marks)

P.T.O.

3. (a) The Consumer Price Index (Base Nov. 1996 = 100) shows values as follows:

Nov 1996	Nov 1997	Nov 1998	Nov 1999	Nov 2000
129.7	134.3	138.2	141.2	145.9

The index was reorganised so that November 1998 = 100. Calculate the value of the new index for November 1999 and November 2000. (5 marks)

(b) What level of annual inflation would have been reported in November 2000? (5 marks)

(c) Calculate relevant indices and write a short report on the relative wages paid to males and females from 1986 - 2000.

Year	Average Weekly Earnings - Females	Average Weekly Earnings - Males
	€	€
1986	138	210
1988	155	230
1990	171	258
1992	194	279
1996	207	293
1998	222	304
2000	247	341

(10 Marks)

4. Quarterly data for visitors to a tourist site are as shown:

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
2002	5100	7821	6645	5265
2003	4213	6510	5837	5243
2004	3659	5992	5536	4870
2005	2899	5354	4893	4186
2006	2547	5230	4261	3009

(a) Graph the data. (5 marks)
(b) Calculate the trend and the seasonal variation. (10 marks)
(c) Use the data to forecast the number of visitors in 2007. (5 marks)

5. The marks obtained for assessment of course work throughout the year were compared with the end of year examination marks for a number of students.

End of year exam mark	43	30	47	56	80	35	100	75
Continuous Assessment	55	37	58	70	90	30	95	94

(a) Draw a scatter diagram. (5 marks)

(b) Calculate the correlation between exam marks and continuous assessment. (5 marks)

(c) If one were to know that a particular student obtained 75 for continuous assessment, what is your estimate for the mark s/he might gain for the end of year exam? (10 marks)

6. (a) Text messages arrive onto a mobile phone on average at 3 per hour in a Poisson distribution during weekend evenings. What is the probability that in a given hour more than 2 messages arrive? (5 marks)

(b) A committee of three officers is to be chosen from a group of 8 people. What is the total number of different committees that can be selected, if no account is paid regarding who might be appointed President, Secretary or Treasurer within each committee? (5 marks)

(c) An examiner in business studies noted that the graph of exam marks was normally distributed with a mean of 55 and a standard deviation of 15. The top 10% of candidates were awarded an A grade. What is the minimum mark required to achieve an A grade? (5 marks)

(d) In a forecasting study 1200 individuals were asked whether or not they intended to buy a new car in the following calendar year. Three hundred indicated that they had such plans. At the end of the year the entire sample was again contacted to investigate the reliability of the forecast. It was discovered that four hundred had made a purchase, although only 250 of them had indicated such an intention in the previous survey. What is the probability that a random person selected from the study correctly indicated his or her intentions? (5 marks)

P.T.O.

7. (a) It was reported that 15 years ago an equal proportion of students entered college for the various areas of study – Arts, Science, Engineering and Management. Recent statistics showed that a random sample of student entries were as follows:

Arts	**Science**	**Engineering**	**Management**
250	220	200	270

Using 5% level of statistical significance, test the hypothesis that entry patterns are unchanged. (10 marks)

(b) In a random survey it was found that 130 out of 200 teenagers in one country area had BEBO accounts while in a second area another random sample of 150 teenagers showed that 90 had such accounts.
Is this a statistically significant difference? Test at the 5% level.
(10 marks)

8. Design a research programme to investigate behaviour and attitudes regarding individuals organising provision for a pension. (20 marks)