Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS 1

THURSDAY, AUGUST 20, 2009. 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 reviewing a survey which aims to estimate the proportion of adults who use online banking. The number of interviews in the random sample used was 1,500 and the proportion of users was reported to be 36%. Calculate the level of precision that will attach to the population estimate at 95% confidence. (10 marks)

   (b) A researcher is planning her research expenditure. Suppose that the costs of interviewing and data processing are estimated to be €5 per person, with fixed costs for the survey amounting to €1,000. She wants to use a simple random sample at 99% confidence level with a precision of $\pm$ €5. In estimating monthly saving, what might be the total costs of this survey? Previous research showed the mean saving to be €100 per month with a standard deviation of €25. (10 marks)

2. (a) A survey of students showed downloading of music from the Web to be

Number of downloads per month	Persons
0	135
1 – 9	63
10 – 19	31
20 – 29	17
30 and over	4

   (b) Show this behaviour in a histogram. (5 marks)
   (c) Calculate the mean number of downloads and the standard deviation. (10 marks)
   (d) Select **either** a Z-chart or a Lorenz curve, show how it is constructed, sketch it and state why it might be useful for business analysis. (5 marks)

P.T.O.

3. (a) Calculate the value of a Paasche Overall Price Index for a number of products. The prices of these products in 1997 and in 2009 were found and their quantities are listed below.

Constituent	Price 1997	Price 2009	Quantity 1997	Quantity 2009
A	€20	increased by 40%	38 units	37 units
B	€24	increased by a third	20 units	22 units
C	€40	unchanged	14 units	15 units
D	€10	decreased by 10%	16 units	16 units
E	€20	increased by 5%	8 units	8 units

If the value of the Index in 1997 was 118 (base 1990 = 100), what is its value in 2009? (10 marks)

(b) Describe how the Consumer Price Index (CPI) is constructed and how the Central Statistics Office upgrades it. (5 marks)

(c) Identify two uses of the CPI. (5 marks)

4. The sales figures in € (thousands) of a company have shown an increase as indicated below.

	Q1	*Q2*	*Q3*	*Q4*
2005	35	46	39	42
2006	37	47	45	46
2007	38	52	49	50
2008	42	59	57	60
2009	54			

(a) Graph the data. (5 marks)
(b) Calculate the trend and the seasonal variation. (10 marks)
(c) What is the forecast for sales for the remaining quarters of 2009? (5 marks)

5. (a) A Sales Manager ranked staff from 1 = 'Best' to 8 = '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
Ranked by potential in training	7	4	2	6	1	8	3	5
Sales (units)	97	165	187	52	173	144	167	82

What is the correlation (if any) between the manager's assessment and sales results? (5 marks)

(b) A market analyst found that weekly sales in garden centres (Y Euro in thousands) and population X (population in thousands).

X	50	24	37	68	57	40	28	15	45
Y	6	4.3	4.4	6.1	5.4	5	4.7	2.8	4.5

Plot a scatter diagram of Y against X. (5 marks)

(c) Calculate the value of the correlation coefficient and interpret it. (10 marks)

6. (a) Height in a normally distributed population with unknown mean has a standard deviation of 4 inches. If 10% of the population are 71 inches or higher, what is the mean? (5 marks)

(b) On a particular day three customers are considering viewing used cars at a main dealership. If the probability of purchase for each individual is 0.3, what is the probability that all three will buy? Buying decisions are independent events. (5 marks)

(c) How many different committees of 3 can be selected from a group of 7 employees if the roles of Chair, Treasurer and Secretary have to be identified?

(5 marks)

(d) Passenger aircraft arriving at a busy airport follow a Poisson distribution with an average of 2 planes every 5 minutes. What is the likelihood that this level of arrivals will be exceeded in any 5 minute period? (5 marks)

7. (a) In a survey it was found that 90 out of 300 rural shoppers bought a new service. In a sample of 200 urban shoppers 27% bought the service. Is this a statistically significant difference? Test at the 5% level. (10 marks)

(b) An SPSS analysis using the CROSSTABS command showed the following results.

	Intend to holiday overseas in 2009		
AGE	**Yes**	**No**	**Undecided**
Under 25	350	100	300
25-44 years old	340	360	120
45 and over	110	240	80

Are age and intention to holiday overseas independent? Test at the 5% level of significance. (10 marks)

P.T.O.

8. (a) After you have completed the research, draft the guidelines to be followed in producing the report. (10 marks)

(b) The table attached on educational attainment was produced by the Central Statistics Office in December 2008 and is from a special module of the Quarterly National Household Survey 2008.

Draw a chart and describe the patterns found in no more than **five** sentences.

Highest level of education attained of person aged 15-64 by year 2002-2008

	Percentage of persons						
All persons aged 15-64	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Primary or below	20	17	17	16	15	14	14
Lower secondary	21	22	21	21	20	20	20
Higher secondary	26	27	27	28	27	27	28
Post Leaving Cert	11	11	10	9	10	10	9
Third level non degree	8	8	9	10	10	10	10
Third level degree or above	14	15	16	16	18	19	19
Total persons aged 15 - 64	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Quarterly National Household Survey
Central Statistics Office
December 2008

(10 marks)