



Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS I

FRIDAY, MAY 9, 2003. 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) Use an example to show how to select a stratified random sample of Irish adults. (10 marks)
- (b) A researcher is formulating costs for a major project to estimate the percentage of Irish households connected to the Internet. 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 €1,500. If the total budget available is €9,000 and the proportion of households is estimated to be 30%, what level of precision will attach to the population estimate at 95% confidence? It is presumed that simple random sampling will be adopted.(10 marks)

2. The following data relate to the ages of a random sample of consumers who hold SSIA accounts.

26	46	23	39	47	50	60	71	53	80
37	22	56	65	54	40	87	57	39	30
33	18	42	59	24	26	22	25	42	54
24	19	46	46	20	43	25	49	57	43
22	53	37	59	33	54	26	31	59	32
36	48	70	39	50	68	34	41	35	58
19	31	51	25	68	71	32	73	34	41
48	26	48	35	81	32	24	39	58	16
66	63	54	53	38	23	52	62	50	58

- (a) Show the age distribution in a histogram. (5 marks)
 - (b) Calculate the mean for the sample. (5 marks)
 - (c) Calculate the standard deviation for the sample. (5 marks)
 - (d) Calculate a 90% confidence interval for the mean age of SSIA account holders. (5 marks)
- P.T.O.**
3. (a) From the data below calculate an index of 'real' earnings for females and for males and also calculate an index of the relative wages for Female to Male

Clerical workers in Ireland. All data are from the Central Statistics Office website (<http://www.cso.ie>). (10 marks)

Average Hourly Earnings for Male Clerical workers

Year	Q1	Q2	Q3	Q4
2000	11.44	11.63	12.33	12.37
2001	12.16	12.49	12.77	13.16
2002	13.03	13.1	13.63	

Average Hourly Earnings for Female Clerical workers are also reported:

Year	Q1	Q2	Q3	Q4
2000	8.79	9.22	9.14	9.62
2001	9.89	9.65	10.09	10.59
2002	10.56	10.85	11.07	

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

Year	Q1	Q2	Q3	Q4
2000	107.8	110.1	111.7	113.3
2001	113.5	116.1	116.8	117.6
2002	118.8	121.5	122.0	

- (b) Interpret your findings. (5 marks)
- (c) If a contract states that my income will be index linked and I was paid €3,500 a month in Q1 of 2000, use the information above to determine how much per month I should be paid in Q1 of 2003 if the Consumer Price Index at that date was reported at 126.1 and my real income were to remain constant. (5 marks)

4. Quarterly data for cinema admissions (in thousands) are shown below.

Cinema Admissions Northern Ireland (Thousands)

YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL	2,313	2,452	3,490	3,829	3,436	3,796	3,848	4,050	3,991	4,504	4,832	5,010

- (a) Calculate the trend. (10 marks)
- (b) Assuming that past patterns continue, calculate a forecast of admissions for 2003 and 2004. (5 marks)
- (c) Chart the original data and the trend on the same graph. (5 marks)

5. Participants in a weight loss programme had similar diet but varied their performance of strenuous exercise in their local gym. Weight loss and exercise regimes are noted.

Participant	Weight loss (lbs)	Minutes exercise per week
A	2	100
B	4	250
C	4.5	220
D	7.5	300
E	6	360
F	3	200

- (a) Draw a scatter diagram of the data and interpret the findings. (5 marks)
- (b) Find the value of the correlation coefficient and hence calculate the coefficient of determination. (10 marks)
- (c) Distinguish between correlation and regression. (5 marks)
6. (a) A firm has submitted proposals for three contracts A, B and C which are independently awarded. If the chances of success are 50%, 30% and 40% respectively, what is the probability that the company will be awarded only one contract? (5 marks)
- (b) Thirty percent of a product is made on machine S, which has a defective rate of 2%. The remaining product is made on an old machine T, which has a defective rate of 4%. If a defective product is found at the inspection stage, calculate the chances that it came from machine S. (5 marks)
- (c) Suppose that mobile phone bills are normally distributed with a mean of €50 per month and a standard deviation of €15. If the heavy user segment is defined to be the top 25% of customers, what is the minimum level of monthly bill that would be included in this segment? (5 marks)
- (d) If records in easyCar (Paris) follows a Poisson distribution with an average of 1 serious crash per day. What is the likelihood that on any particular day more than 2 serious incidents will occur? (5 marks)

P.T.O.

7. (a) In a small sample of 10 households in Dublin it was found that spending on an Internet subscription plus phone calls purchases was €400 per household on average with a standard deviation of €100. In Cork another small sample of 14 households showed the average spend to be €320 with a standard deviation of €50.

Use a suitable hypothesis test to draw your conclusions. (10 marks)

- (b) A report on product quality in two factories contains the following data:

Product quality	Factory	
	A	B
Grade A	81 items	219 items
Grade B	150 items	350 items
Grade C	89 items	111 items

Conduct a formal hypothesis test to determine whether or not these figures indicate a statistically significant difference in quality depending on the factory.

(10 marks)

8. Design a research programme to investigate the behaviour and attitudes of Irish drivers regarding the penalty points for driving offences. (20 marks)