



Foundation Certificate in Marketing - Stage 1

MARKETING INFORMATION ANALYSIS 1

THURSDAY, MAY 21, 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) Explain the meaning of “stratified random sampling” and “quota sampling” and clearly indicate the difference between the two methods. (5 marks)
- (b) A media planner is analysing the results of TV viewing information gained from research on 225 respondents in a particular country and these results showed that the average viewing duration was 13.5 hours per week with a standard deviation of 4.5 hours. Set up a 95% confidence interval estimate for the average duration for TV viewing in the population in that country. (10 marks)
- (c) What is the effect of the size of sample on the precision of a confidence interval? (5 marks)

P.T.O.

2. The following sample data relates to earnings in € (thousands) of business executives.

35	55	32	48	56	59	69	80	62
46	31	65	74	63	49	96	66	48
42	27	51	68	33	35	31	34	51
33	28	55	55	29	52	34	58	66
31	62	46	68	42	63	35	40	68
45	57	79	48	59	77	43	50	44
28	40	60	34	77	80	41	82	43
57	35	57	44	90	41	33	48	67
75	72	63	62	47	32	61	71	59

- (a) Show the income 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 99% confidence interval for the population mean. (5 marks)

3. (a) A product is composed of 3 constituents which are in the ratio of 97 units to 2 units to 1 unit and the prices per unit in 2004 were 14 euro, 99 euro and 20 euro respectively. Suppose that these prices per unit changed in 2009 to 13 euro, 120 euro and 22 euro respectively. Calculate an overall Laspeyres Price index for 2009 if the value of the index in 2004 was 105.3 (Base 2000 = 100). (10 marks)

(b) The table shows average salaries in a particular sector and also the Consumer Price index for the years 1994 to 2008.

Year	Salary (€)	Consumer Price Index (Base 2000 = 100)
1994	35,374	94.3
1996	36,339	95.7
1998	37,258	98.2
2000	40,163	100
2002	41,916	104.5
2004	43,107	107.6
2006	44,768	110.3
2008	45,202	112.4

Draw up an index of purchasing power over the time and briefly describe the pattern. (10 marks)

4. The sales figures in €(thousands) of a company have been in decline for the recent past as indicated below.

	Q1	Q2	Q3	Q4
2007	90	88	83	80
2008	74	83	70	62
2009	58	42		

- (a) Graph the data. (5 marks)
- (b) Calculate the trend and seasonal variation. (10 marks)
- (c) Use the trend and seasonal variation to forecast sales for each quarter of 2010. (5 marks)
5. The following data shows sales of cider (Y in thousand litres) and the average daily temperature (X in degrees Centigrade).

Y	23	34	45	57	15	37
X	15	21	16	23	14	19

- (a) Plot a scatter diagram of Y against X. (5 marks)
- (b) Find the least squares regression of sales on temperature and plot the line on the diagram. (10 marks)
- (c) Use the regression equation to predict sales if the average temperature is 20 degrees. (5 marks)
6. (a) A car rental company found that the probability of a customer returning a car late is 15%. Suppose that 4 cars were hired on a particular day, what is the probability that none of them are returned late? All events are independent. (5 marks)
- (b) What is the probability of correctly choosing the Lotto numbers in Ireland where you have to choose six numbers between 1 and 45 inclusive? (5 marks)
- (c) If the probability is 0.002 that a computer component is below technical specifications, what is the probability that in a sample of 1,000 components exactly 2 will be found to be substandard? (5 marks)
- (d) If a normally distributed population has a mean of 48 years with a standard deviation of 15 years, what percentage of the population is between 45 and 55? (5 marks)

P.T.O.

7. (a) An investigation of spending for Irish households found average weekly expenditure to be €108 for a sample of 200 urban households and €87 for 225 rural households. Supposing that the standard deviation in each case was €50, test whether or not such a difference is statistically significant at the 5% level. (10 marks)

(b) The purchase frequency of different brands of soft drinks observed at a number of random stores over a week was as follows:

Brand	A	B	C	D	E
Purchased	217	221	254	238	255

Conduct a formal hypothesis test at the 5% level to determine whether or not these figures indicate a statistically significant difference in preferences. (10 marks)

8. Design a research programme to investigate the present and anticipated behaviour and attitudes of Irish individuals regarding saving money in Irish banks in 2009. (20 marks)