

Ollscoil na hEireann, Gaillimh
National University of Ireland, Galway

Semester 2, 2004/2005

Exam Code(s) BA1

Exam(s) Second Arts

Module Code(s) EC233

Module(s) Research Methods in Economics

Paper No. _____

Repeat Paper _____ Special Paper _____

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Internal Examiner(s) Mr. B. Kennelly
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Instructions:

Section A – answer 2 out of 3 questions (30 marks)
 Section B – answer 3 out of 5 questions (45 marks)
 Each question carries equal marks.

Duration 3 hours
 No. of Answer books 1

Requirements:

Handout _____

MCQ _____

Statistical Tables _____

Graph Paper _____

Log Graph Paper _____

Other Material _____

No. of Pages 9

Department(s) Economics

SECTION A

Instructions: Answer TWO questions.

All questions carry 15 marks.

1.

- a) Define and explain what is meant by research.
- b) If the role of a researcher is that of an observer and each observer is prone to error, then what is the difference between an observer who can draw conclusions with common sense and a researcher?

2.

- a) Explain the differences between the four levels (scales) of measurement.
- b) What are the three measures of central tendency? How are they calculated? Which scales of measurement are appropriate to describing each?
- c) Discuss the advantages and disadvantages of secondary data.

3.

- a) Why do we take samples? Outline the step by step procedure for drawing a sample.
- b) What is stratified random sampling? Why do we use it? What are its advantages and disadvantages?

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SECTION B

Instructions: Answer THREE questions.

All questions carry 15 marks.

1.

- a) Write out the five steps in a standard hypothesis test.
- b) An American sample of influential Republicans and Democrats was asked as part of a comprehensive survey whether they favoured lowering environmental standards so that high – sulphur coal could be burned in coal – fired power plants. The results were:

Party	Number Sampled	Number in favour
Republican	800	168
Democrat	1,000	200

At the .02 significance level, can we conclude that there is a larger proportion of Republicans in favour of lowering the standards?

2.

- a) Explain when you would use the t-distribution instead of the z-distribution.
- b) The telephone company claims in its annual report that the typical customer spends €60 per month on local and long distance service. A sample of 12 subscribers revealed the following amounts spent last month.

64	66	64	66	59	62	67	61	64	58	54	66
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- i. What is the point estimate of the population mean?
- ii. Develop a 90% confidence interval for the population mean.
- iii. Is the company's claim that the "typical customer" spends €60 per month reasonable?

3.

- a) Outline the major characteristics of the F distribution.
- b) A real estate developer is considering investing in a shopping mall on the outskirts of Galway. Three parcels of land are being evaluated. Of particular importance is the income in the area surrounding the proposed mall. A random sample of four families is selected near each proposed mall. Following are the sample results. At the 0.01 significance level, can the developer conclude that there is a difference in the mean income?

Southside (€000)	North side (€000)	Westside (€000)
64	74	75
68	71	80
70	69	76
60	70	78

- i. State the null and alternate hypothesis
- ii. What is the decision rule?
- iii. Compute SST, SSE, and SS Total.
- iv. Compute an ANOVA table.
- v. State your decision regarding the null hypothesis.

4.

A company is studying the relationship between the number of client contacts and the euro amount of sales. The following sample information was gathered. The x column indicates the number of client contacts last month, and the y column shows the value of sales (€thousands) last month for each client sampled.

Number of contacts, X	Sales y	Number of contacts x	Sales y
14	24	23	30
12	14	48	40
20	28	50	85
16	30	55	120
46	80	50	110

- i. Explain what is meant by the least squares principle.
- ii. Write out the general form of the linear regression equation?
- iii. Determine the regression equation in the above example.
- iv. Determine the estimated sales if 40 contacts are made.

- 5.
- a) The goodness – of – fit test is one of the most commonly used statistical tests. Describe briefly two uses to which this test can be put.
 - b) The manager of the ACME corporation took samples at random from the file of minor accidents and classified them according to the time the accident took place.

Time	Number of accidents
8-9AM	7
9-10AM	7
10-11AM	21
11-12AM	9
1-2PM	8
2-3PM	9
3-4PM	20
4-5PM	7

Using the goodness-of-fit test and the 0.01 level of significance; determine whether the accidents are evenly distributed throughout the day. Write a brief explanation of your conclusion.

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