

**OLLSCOIL NA hÉIREANN, GAILLIMH
NATIONAL UNIVERSITY OF IRELAND, GALWAY**

SUMMER EXAMINATIONS 2000/2001

MSc Occupational Health & Ergonomics

DATA ANALYSIS (IE 521)

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Time allowed: 3 hours

Answer FIVE questions, ONE at least from Sections A, B and C

Use separate answer books for each Section

SECTION A - STATISTICS

Question 1

Samples of female employees in two different environments were tested for stress levels on a scale from 0-150, where 0 means no stress at all. The first group comprised factory shop floor operatives, $n=50$, the mean stress level was 120 and the sum of squares was 5.51. In the second group, all the women were clerical staff, $n=36$, the mean stress level was 124 and the sum of square was 5.18.

- (a) Test the hypothesis that the groups differed significantly in relation to stress.
- (b) Offer an explanation for these findings.
- (c) If you were to repeat the study, what improvements would you suggest.

Question 2

Write short notes on four of the following:

- (a) When would you use a median rather than a mean?
- (b) What is the usefulness of Z scores?
- (c) Describe the difference between parametric and non-parametric data analyses.
- (d) What influences the correlation co-efficient, r ?
- (e) What are the assumptions underlying Chi Square and what can be done if they are violated?

Question 3

Write short notes on four of the following:

- (a) The use of Percentiles and Percentile Ranks
- (b) The co-efficient of determination
- (c) Level of Measurement Scale
- (d) Assumptions underlying parametric data analyses
- (e) Explain the difference between causation and correlation

SECTION B - EPIDEMIOLOGY

Question 4

Imagine you are asked to investigate a cluster of cancer cases among workers in a chemical factory in a town in the West of Ireland. What epidemiological information would you require and what investigation strategies would you put in place? Discuss how existing literature would assist you.

Question 5

Compare and contrast the usefulness of the traditional randomised controlled trial and a quasi-experimental study in the case of coronary heart disease prevention.

Question 6

Identify and summarise the five criteria of causality. Illustrate with a practical example how these might be employed in assessing epidemiological data evidence.

SECTION C - COMPUTING

Question 7

Statistical analysis of data can be a complex process. Discuss appropriate software tools, commenting on the different types of analysis possible and how you would perform them using the computer.

Question 8

Describe in detail the difference between Operating Systems and Computer Packages. Give an example of each and discuss how they work and what they do.