

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF ENVIRONMENTAL SCIENCE AND HEALTH

FINAL EXAMINATION

ENVIRONMENTAL EPIDEMIOLOGY: ESH 4114

January 2013

Time Allowed: 3 hours

Total Marks: 100

INSTRUCTIONS:

Answer any FOUR questions. Each question carries 25 marks.

Question 1

Give a comparative analysis of the major epidemiological study designs.

Question 2

Discuss the criteria commonly used to assess the causal nature of observed associations.

Question 3

a)The blood level of cadmium increases after the start of exposure and reaches a plateau after about 3 months, as shown in figure 9.5. Explain how you would design a study using blood cadmium as a measure of exposure in a cross-sectional study of workers.

(10 marks)

b)Six months after a new production process is introduced in a copper smelter, a suspicion of cadmium pollution is raised. Explain how biological monitoring of residents in the potentially polluted area helps to distinguish between a new cadmium pollution problem and one that has existed for many years. (Refer to figures 9.4 and 9.5)

(15 marks)

Question 4

A new irrigation scheme is to be established in your area of jurisdiction. You have been asked to carry out a risk assessment and institute risk management. How would you perform this task?

Question 5

Discuss confounding in studies of the association between exposure to a cause (a risk factor) and the occurrence of diseases.

Question 6

a) A statistically significant association has been demonstrated in a case study between the use of a drug for asthma and the risk of dying from asthma in young people. On the basis of this result, would you recommend the withdrawal of the drug? (7 marks)

b) The relative risk of lung cancer associated with passive smoking is low but the population attributable risk is considerable. What is the explanation for this? (8 marks)

c) Prevalence rate has been used to measure the frequency of non insulin dependent diabetes in different populations according to table 2.2.

(i) Is prevalence rate a useful measure of this situation? (3 marks)

(ii) What are the possible explanations for the variation in diabetes prevalence rates indicated in table 2.2. (7 marks)

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SUPPLEMENTARY EXAMINATIONS**

ENVIRONMENTAL EPIDEMIOLOGY: ESH 4114

Year 2013 Time Allowed: 3 Hours Total Marks 100

INSTRUCTIONS TO CANDIDATES:

Answer any FOUR (4) questions. Each question carries 25 marks

Question 1

A cohort study was conducted to investigate the association between coffee drinking and anxiety in a population-based sample of adults. Among 10 000 coffee drinkers, 500 developed anxiety. Among 20 000 non-coffee drinkers, 200 cases of anxiety were observed.

- (a) what was the incidence of anxiety among coffee drinkers? **(3 marks)**
- (b) what was the incidence of anxiety among non-coffee drinkers? **(3 marks)**
- (c) calculate the **relative risk** of anxiety associated with coffee drinking and also explain your answer. **(9 marks)**
- (d) calculate the etiologic fraction and explain your answer. **(10 marks)**

Question 2

Discuss and give examples of the difference between observational studies and experimental studies in environmental epidemiology.

Question 3

- a) Explain, giving examples environmental hazards found in the work setting. **(10 marks)**
- b) How can epidemiologic research assist in addressing these problems **(15 marks)**

Question 4

Comment on the statement: "Epidemiology is the only scientific discipline essential to causal inference."

Question 5

Discuss the main types of systematic error in epidemiological studies outlining how their effects can be reduced

Question 6

Give a critical analysis of the role of environmental epidemiology in the prevention and control of diseases.

End of question paper