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University Examinations 2012/2013

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN FOOD SCIENCE AND NUTRITION

AFN 2202: NUTRITIONAL EPIDEMIOLOGY 1

DATE: DECEMBER 2012 **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **ONE** and any other **TWO** questions*

QUESTION ONE – 30 MARKS

(a) Chronic diseases such as Cancer, Diabetes and Cardiovascular diseases have increased in Kenya in 2000s compared to before 1960s. What is the most important explanation for the differences? What additional factors would you consider to explain the difference in the incidence? (6Marks)

(b) A Nutritionist was interested in Rugby players, whom he established from the registry of players. He established that the average death of Rugby players was the same as that of the general population. He concluded that these findings refuted the prevailing wisdom that Rugby is a dangerous game. Explain his error. (3Marks)

(c) A researcher determined that being left handed was dangerous because he found that the average age of death of left handers were lower than of right handers. Was the correct? Why or why not? (2Marks)

(d) What is the underlying problem of comparing the average age at death or the average age at which a person gets a specific disease between two populations? How would you avert this problem? (5Marks)

(e) In a 20 year study by vanderpump et al, only 24% of women who were smokers at the time of initial survey died during the 20 year follow-up period. Does this explain that women smokers fare better than their non smoking counterparts? (2Marks)

(f) A trait in Goats called "Yellows" occurs when a specific genetic strain of goats is fed yellow leaves. Farmers who own this goat strain observe the trait only relies not clear on the nature of diet, i.e. whether they are fed yellow leaves or not. Farmers who feed their goats only yellow

leaves but own several strains of goats observe the trait to be genetic. What arguments would you use to both kinds of farmers to explain that the trait is both genetic and environmental? (3Marks)

(g) A newspaper article claims that diabetes is neither genetic nor environmental but nulticausal. Another article announces that half of Colon Cancer cases are linked to genetic factors. Criticise both messages. (3Marks)

(h) The only cause of Tuberculosis is infection with *tubercle bacillus*. Explain. (6Marks)

QUESTION TWO – 20 MARKS

(a) The table below give data for incidence rate for women treated for Tuberculosis in the early 20th Century using repeated x-ray fluoroscopy of the lungs.

Table 1: Breast Cancer cases and Person years for women with Tuberculosis repeatedly exposed to multiple X-ray fluoroscopies and un-exposed women with Tuberculosis.

	Radiation Exposure		
Breast Cancer cases	41	15	56
Person Years	28,010	19,017	47,027
Rate (cases) 10,000 Person Year	14.6	7.9	11.9

Data from Boice and Monson.

i) Calculate the incident rate among those exposed to radiation in both groups. (4Marks)
ii) Calculate the incidence rate difference. (1.5Marks)
iii) Calculate the incident rate ratio. (1.5Marks)
iv) What is the relative effect? (1.0Marks)
v) What does the incidence rate difference imply in this case? (3Marks)

(b) Risk does not mean effect. Explain using example (s). (5Marks)

(c) If incident rates remain constant with time and if exposure causes disease, which will be greater, the risk ratio or the rate ratio? (4Marks)

QUESTION THREE – 20 MARKS

(a) Why are the causes of disease most often referred to as multi causal? (10Marks)
(b) There are three categories of disease prevention. Primary, Secondary or Tertiary. Explain the significance of disease prevention and explain the aforementioned steps of prevention. (10Marks)

QUESTION FOUR – 20 MARKS

(a) Discuss some of the challenges affecting nutritional epidemiology. (10Marks)
(b) What are the limits of nutritional epidemiology? (10Marks)

QUESTION FIVE – 20 MARKS

(a) Describe the following:
   i) Outcome (3Marks)
   ii) Exposure (2Marks)
   iii) Incidence (2Marks)
   iv) Prevalence (2Marks)
   v) Incidence rate (1Mark)

(b) Which of the two study designs is the most suitable for rare disease? (2Marks)
   a) Prospective
   b) Retrospective

(c) List advantages and disadvantages of retrospective study designs. (8Marks)