



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

**SECOND SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF
PUBLIC HEALTH (REPRODUCTIVE HEALTH) AND MSC (ENVIRONMENTAL
HEALTH)**

HPH 802: PRINCIPLES OF EPIDEMIOLOGY

DATE: Friday, 19th May 2017

TIME: 2.00p.m-5.00p.m

INSTRUCTIONS

Answer ALL questions in this section (50marks)

1. (a) Define the following terms as used in epidemiology
 - (i) Age specific mortality rate (2mks)
 - (ii) Annual mortality rate for all causes (2mks)
- (b) Differentiate between endemic, pandemic and epidemic (6mks)
- (c) Explain the following terms as used in disease outbreak
 - (i) Single exposure (2mks)
 - (ii) Continuous exposure (2mks)
 - (iii) Single exposure common vehicle outbreak (3mks)
- (d) Outline the two epidemiologic assumptions (2mks)
- (e) Justify the use of cross-sectional studies (6mks)
- (f) Compare cohort studies and case control studies in terms of: (4mks)
 - (i) Study Groups
 - (ii) Comparison Groups
- (g) Explain the term prevalence as used in epidemiology (5mks)
- (h) Explain the three levels of disinfection (6mks)
 - (i) Giving examples explain a risk factor (6mks)
 - (j) Describe the four Level of masking in clinical trials (4mks)

SECTION B: ANSWER ANY THREE QUESTIONS IN THIS SECTION (90MKS)

2. (a) Explain the four main stages in a scientific investigation (8mks)
- (b) Discuss the term Case Definition as used in epidemiology (10mk)
- (c) Data of children who immunized against Hepatitis B was obtained. Children who developed Hepatitis B were 42 out of 1500 and 90 out of 2500 children among those who were not immunized.
 - (i) Present the above data in a 2x2 contingency table (4mks)
Calculate the following and show your working:

- (ii) Incidence of disease among the immunized children (2mks)
- (iii) Incidence of disease among children not immunized (2mks)
- (iv) Relative risk and interpret the results (4mks)
- 3. (a) Explain the purpose of epidemiology (8mks)
- (b) Identify causes of Perinatal deaths (5mks)
- (c) In a population of 2000, the prevalence of a disease is 20%, sensitivity is 50%, and specificity is 50%.
 - (i) Present this information in a 2x2 contingency table (2mks)
 - Calculate the following: (8mks)
 - (ii) Prevalence
 - (iii) Sensitivity
 - (iv) Specificity
 - (v) Positive predictive value
- (d) (i) Define the term validity of a screening test (1mk)
- (ii) Explain three sources of variability that can influence a screening test (6mks)
- 4. (a) Identify the two types of analytic studies and give an example of each (4mks)
- (b) Outline the different type of bias (3mks)
- (c) Differentiate between risk ratio and prevalence ratio (10mk)
- (d) Identify the factors that affect incidence (8mks)
- (e) Explain how to overcome non-compliance in Randomized clinical trials (5mks)
- 5. (a) Explain the problem with matching in case control studies (4mks)
- (b) Explain the nine point criteria for causal association as illustrated by Gordis (18mk)
- (c) Talbot and colleagues carried out a study of sudden unexpected death in women. Out of 80 sudden unexpected deaths, 38 were women who smoked more than one cigarette in a day. Among 80 controls, there were 10 women who smoked more than one cigarette in a day.
 - (i) Illustrate this information in a 2 x2 contingency table (4mks)
 - (ii) Calculate the Odds Ratio (2mks)
 - (iii) Interpret the above findings (2mks)
- 6. (a) Differentiate between the two measures of morbidity (10mks)
- (b) In a study of Lung cancer, 3000 boys and girls 10 years were followed up to determine disease status. Annual examination on subjects was done and also by daily surveillance of hospitalization.
 - (i) Identify the type of study (2mks)
 - (ii) Illustrate using a well labelled diagram the appropriate study design for this study (4mks)
 - (iii) List four possible exposures for this study (2mks)
 - (iv) Derive a hypothesis for each of the exposures listed above (4mks)

(c) The following results were obtained by two physicians

Physician1	Physician 2			
		Abnormal	Normal	
	Abnormal	40	20	60
	Normal	10	30	40
		50	50	100

- (i) Calculate the percent agreement (2mks)
- (ii) Create a new table to show your working (2mks)
- (iii) Calculate percent Agreement by chance (2mks)
- (iv) Calculate the Kappa coefficient and explain which kind of agreement it represents (2mks)