JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTERS IN PUBLIC HEALTH

1ST YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR

CENTRE: KISII

COURSE CODE: HMP 5112

COURSE TITLE: PRINCIPLES OF EPIDEMIOLOGY

EXAM VENUE: **STREAM: MSc. Public Health**

DATE: 3/12/2013 **EXAM SESSION: 9.00 – 12.00 NOON**

TIME: 3 HOURS

Instructions:

1. **Answer question 1(Compulsory) and ANY other 3 questions**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

QUESTION 1 (COMPULSORY)

a) List the two basic epidemiologic design strategies (types of Epidemiology). **(2 marks)**
   i. List the different observational study designs and briefly explain (with examples) the difference between observational and experimental study designs. **(4 marks)**
   ii. List the different study designs in terms of hierarchy from the "ultimate" or most accepted evidence to the least. **(1 mark)**

b) List the two major types of bias. **(2 marks)**
   a. List three methods used to control confounding and briefly explain how they can be used in a study design to control for confounding. **(6 marks)**

QUESTION 2

a) Define Incidence (describe the numerator and denominator). **(3 marks)**

b) Define Point Prevalence (describe the numerator and denominator). **(3 marks)**

c) Describe the relationship between Incidence and Prevalence. **(3 marks)**

d) Define the following rates (describe the numerator and denominator):
   i. Crude death rate **(2 marks)**
   ii. Infant mortality rate **(2 marks)**
   iii. Maternal mortality rate **(2 marks)**

QUESTION 3

a) Describe the study design of a Randomized Clinical Trial (RCT). **(5 marks)**

b) Show a labeled schematic illustration of an RCT. **(2 marks)**

c) Describe the distinguishing feature or hallmark of the RCT study design and briefly explain how it impacts on the study design. **(4 marks)**

d) Describe the possible major outcomes of an RCT study design. **(4 marks)**

QUESTION 4

a) Describe the study design of a Case Control study. **(4 marks)**

b) Show a labeled schematic illustration of a Case Control study. **(1 mark)**

c) List the strengths of Case Control studies. **(4 marks)**

d) List the limitations of Case Control studies. **(4 marks)**

e) Describe the measure most commonly used to estimate risk in Case Control study designs and briefly explain its relationship to relative risk. **(2 marks)**

QUESTION 5

A new rapid diagnostic test for malaria has been developed at KEMRI. 100 patients who had been screened for malaria using the "golden standard" blood smear microscopy at Siaya District Hospital were subjected to the new test immediately after screening and diagnosis. The results are summarized in the table below:

Results of the new RDT versus Blood Smear Microscopy Diagnosis of Disease			
RDT result	**Disease Diagnosis**		
	Disease	***No Disease***	**Total**
Positive (+)	40	20	60
Negative (-)	10	30	40
Total	50	50	**100**

a) Calculate the sensitivity of the new RDT **(3 marks)**

b) Calculate the specificity of the new RDT **(3 marks)**

c) Calculate the positive predictive value of the RDT **(3 marks)**

d) Calculate the negative predictive value of the RDT **(3 marks)**

e) Briefly, explain whether the new test is reliable given the above results **(3 marks)**

QUESTION 6

a) Define the term; Endemic **(2 marks)**

b) Define the term: Epidemic **(2 marks)**

c) Define the term: Pandemic **(2 marks)**

d) Describe an acute outbreak of infectious disease including the important considerations in the investigation of such an outbreak **(3 marks)**

e) Outline the steps commonly used during the investigation **(6 marks)**