



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

(MAIN CAMPUS)

**UNIVERSITY EXAMINATIONS (MAIN PAPER)
2023/2024 ACADEMIC YEAR**

FIRST YEAR FIRST TRIMESTER EXAMINATIONS

**FOR THE DEGREE
OF
MASTERS OF SCIENCE IN MEDICAL LABORATORY
SCIENCES/BIOMEDICAL SCIENCE/OPTOMETRY**

COURSE CODE: BML 813

COURSE TITLE: ADVANCED MEDICAL EPIDEMIOLOGY

DATE: 7TH DECEMBER 2023

TIME: 8.00-11.00PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY THREE. DO NOT WRITE ON THE QUESTION PAPER

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over

QUESTION ONE -COMPULSORY

1. An investigator selected 40 cases of gastric carcinoma and an equal number of controls matched for age, sex and socioeconomic status. It was found that among cases 30 had an evidence of *H. pylori* and among controls 15 had an evidence of *H. pylori* infection. Is there an evidence of association between *H. pylori* infection and gastric carcinoma.
 - a) Draw the two by two table (5marks)
 - b) Find exposure rates in cases (5marks)
 - c) Find exposure rates in controls (5marks)
 - d) Calculate Odds Ratio (5marks)
 - e) Interpret results (5marks)
2.
 - a) Explain the levels of disease prevention, citing relevant examples in each (10 Marks)
 - b) Highlight the three types of cohort study design and give steps of the study design (10 marks)
 - c) Outlines five main types of bias in research (5 marks)
3.
 - a) Disease does not occur randomly but happen upon the disturbance of the balance of the elements within ecological niche. The elements interact in a variety of ways for disease to occur. Using Malaria as an example discuss the epidemiologic triad to explain disease causation (20 Marks)
4. Use the Table below to answer the questions that follow

| County | Total Pop | Total Births | Total Females Ages 15-44 | Total Females Ages 10-17 | Births Ages 10-17 |
|--------|-----------|--------------|--------------------------|--------------------------|-------------------|
| X | 317,471 | 6,289 | 80,168 | 20,422 | 278 |
| Y | 182,827 | 2,808 | 56,869 | 16,869 | 213 |

- a) For each of the counties, calculate the following:
 - i. The crude birth rate (3Marks)
 - ii. The crude fertility rate (3 Marks)
 - iii. The fertility rate for adolescents aged 10-17 (3 Marks)
 - iv. The percent of total births to adolescents aged 10-17 (3 Marks)
- b) Highlight the advantages and disadvantages of case control studies (6 Marks)

c) Discuss the challenges facing surveillance system and ways that can be used to enhance surveillance system (7 Marks)

5.

| | LUNG CANCER | | TOTAL |
|---------|-------------|-------------|-------------|
| SMOKING | YES | NO | |
| YES | 100 | 1900 | 2000 |
| NO | 80 | 7920 | 8000 |
| TOTAL | 180 | 9820 | |

Calculate:

- a) Incidence in exposed (3marks)
- b) Incidence in unexposed (3marks)
- c) Incidence in population (3marks)
- d) Population Attributable Risk (PAR) (3marks)
- e) Interpret you results for PAR (1mark)
- f) Discuss the Steps involved in conducting a case control study (12 Marks)

