JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE

(EPIDEMIOLOGY AND DISEASE CONTROL/BIOSTATISTICS)/MPH

1ST YEAR 1ST SEMESTER 2024/2025 ACADEMIC YEAR

KISUMU CAMPUS

COURSE CODE: **HMP 5112**

COURSE TITLE: **PRINCIPLES OF EPIDEMIOLOGY**

EXAM VENUE: **STREAM:MSc (Epidemiology &Disease Control/Biostatistics)/MPH**

DATE: **EXAM SESSION:**

TIME: 3.00 HOURS

Instructions:

1. Answer FOUR 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.

Answer question **ONE** and other **THREE** questions (60 marks)

1. i. Potentially, screening could be done for every disease for which there is a diagnostic test or diagnostic signs and symptoms. Discuss criteria, of Wilson and Jungner, used to guide the rational development of screening programs (10 marks).

   ii. State the main ways to assess the performance of screening or diagnostic test. (5 marks).

2 650 patients known to have a particular disease were screened with a new test. 600 controls without this disease were also screened. Of the 650 patients, 567 had a positive test. Of the healthy group without disease, 11 had a positive test.

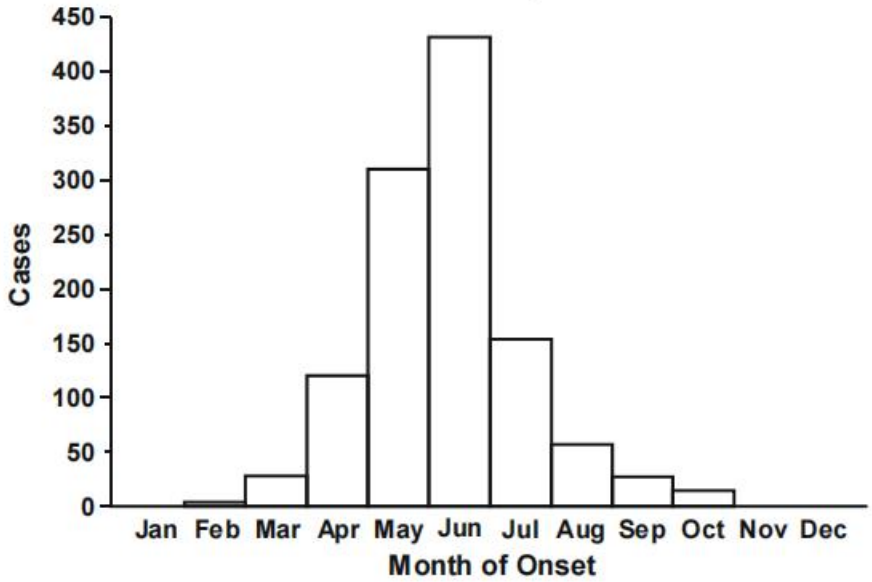
a. Create a 2*2 table and reflect on the interpretation of the data. (5 marks).

b. Calculate sensitivity and specificity of the test. (5 marks).

c. What are the implications for those wrongly classified by the test (5 marks).

3. Figure 1.5 shows the occurrence of a disease event over the course of one year. Use it to answer questions 2 a. and 2.b.

Figure 1.5
Cases of an unknown disease by month of onset



a. If the disease had a seasonal pattern every year, explain what an epidemiologist may learn from this graph (6 marks).

b. If it was an epidemic, discuss scenarios which may cause it (9 marks).

4.i. Why are (point) prevalence rates useful in epidemiology? (5 marks).

ii. Explain factors which may lead to either an increase or decrease in the prevalence rate (10marks).

5. Make short notes on Epidemic patterns with reference to:

i. Common source (5 marks).

ii. Propagated source (5 marks).

Iii. Mixed source (5 marks).

6. (a) Case definition is a set of standard criteria for deciding whether a person has a particular disease or other health related condition. Explain how epidemiologists carry out case definition during an outbreak of measles (6 marks).
(b) Discuss importance of determining rates after making simple counts of cases (9 marks).