MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2015/2016

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN PUBLIC HEALTH

CITY CAMPUS

PHE 822: DISEASE SURVEILLANCE AND OUTBREAK INVESTIGATIONS

Date: 5th May, 2016 Time: 9.00 - 12.00 noon

INSTRUCTIONS:

- Write your University Registration Number on every Answer Booklet you use.
- Do not write your name on any paper you use.
- The time allowed for this paper is TWO (3) hours.
- The questions are set out in TWO (2) sections, A and B.
- Read carefully the additional instructions preceding each section.
- Observe carefully further instructions on the cover of Answer Booklets.

SECTION I. Type 2 Multiple Choice Questions (MCQs).

Instructions:

1. This section has Sixteen (16) questions
2. Answer ALL the Questions
3. Answer either (T) for True or (F) for False against each of the statements
4. A correct answer scores half a mark (½), incorrect answer is penalized minus half a mark (-½); and an unanswered question gets zero (0) – no mark.

1. Public health surveillance includes various activities. Which one of these is not part of public health surveillance?
   a) Data collection
   b) Data dissemination
   c) Data collation
   d) Disease control
   e) Data analysis

2. The primary difference between a surveillance system and a survey is:
   a) a surveillance system is population-based
   b) a surveillance system cannot assure confidentiality
   c) a surveillance system is ongoing
   d) a survey is hospital-based
   e) a survey is cheaper

3. The key sources of morbidity data include the following:
   a) Environmental monitoring data
   b) Hospital discharge data
   c) Laboratory results
   d) Notifiable disease reports
   e) Vital records

4. Criteria for prioritizing health problems for surveillance include which of the following?
   a) Incidence of the problem
   b) Public concern about the problem
   c) Number of previous studies of the problem
   d) Social and economic impact of the problem
   e) Severity of the problem

5. The ultimate purpose of characterizing an outbreak by time, place, and person is to:
   a) Identify errors and miscodes in the data
   b) Provide a comprehensive description of an outbreak by portraying its time course, geographic extent, and populations most affected by the disease
   c) Ensure that all true cases are captured by the surveillance system
   d) Generate hypotheses
   e) Test hypotheses

6. Which of the following are uses of public health surveillance?
   a) Monitor changes in infectious agents
   b) Detect epidemics
   c) Evaluate control measures
   d) Generate hypothesis
   e) Determine geographic distribution of illness

7. Public health surveillance requires the cooperation of people responsible for which of the following?
   a) Providing disease reports
   b) Processing disease reports
   c) Using the information from disease reports for clinical care
   d) Applying the information from disease reports to public health planning and action
   e) Using the information from disease reports for research

8. A case definition of a disease outbreak should consist of which of the following components?
   a) Clinical information about the disease
   b) Person, place and time
   c) Laboratory confirmation of the disease
   d) List of all diseases with a similar signs and symptoms to the one you are investigating
   e) Resources required to investigate the outbreak.

9. The time course of a disease outbreak is usually displayed as a/an:
   a) seasonal trend
   b) secular trend
   c) endemic curve
   d) epidemic curve
   e) epidemiological triad

10. Measles can be transmitted from 4 days before and 4 days after the onset of the rash. This interval of time is known as:
   a) Incubation period
   b) Latent period
   c) Sub-clinical period
   d) Period of infectivity
   e) Contact period

11. In an ongoing outbreak of a disease with no known source and mode of transmission, the primary reason for an investigation relates to:
   a) Prevention and control
   b) Training of staff
   c) Learning more about the disease
   d) Being responsive to the concerns of the community
   e) Legal responsibility

12. The primary purpose for evaluating a surveillance system is to ensure that the system is:
   a) Addressing an important public health problem
   b) Cost-effective

c) Operating as efficiently as possible
d) Serving a useful public health function
e) Detecting epidemics

13. The ability of a surveillance system to detect the cases it is intended to detect is referred to as:
    a) Specificity
    b) Sensitivity
    c) Predictive value positive
    d) Predictive value negative
    e) Simplicity

14. An epidemic curve which follows the classic log-normal pattern of sharp rise and more gradual decline is most consistent with which type of outbreak?
    a) Continuous source
    b) Intermittent source
    c) Point source
    d) Propagated
    e) Mixed

15. In practice the existence of an epidemic is most often determined by:
    a) The identification of more than 10 new cases per week
    b) A current incidence rate that is more than two standard deviations higher than the previous year
    c) A clear case definition
    d) An incidence of disease that is clearly in excess of that expected
    e) Most laboratory specimens testing positive

16. The resistance of a population to an attack by a disease to which a large population of members of the group is immune is referred to as:
    a) Group resistance
    b) Group interventions
    c) Herd immunity
    d) Population resistance
    e) Health workers' effect

SECTION II: SHORT ANSWER QUESTIONS (SAQs)

Instructions

1. **This section has Four (4) Questions**
2. **Answer ALL the Questions**

SAQ1. Distinguish between the following terms:

a) Pathogenicity and Immunogenicity
b) Incubation period and Latent period
c) Active Surveillance and Passive Surveillance
d) Epidemic and Cluster

(6 marks)

SAQ 2.

a) State the criteria for prioritizing health problems for surveillance

b) State the steps you would use to establish a surveillance system.

(6 marks)

SAQ 3. Discuss the criteria used to evaluate performance of a surveillance system

(8 marks)

SAQ 4. After attending a cocktail party for the out-going County Director for Health, many of the health department staff developed gastroenteritis. All attendees were interviewed by a public health officer who had recently completed a course on outbreak investigations. The data is presented in the Table below.

Food item	**Ate specified Food**				**Did not eat specified**			
	Ill	Well	Total	Attack rate	Ill	Well	Total	Attack rate
Macaroni salad	25	15	40		20	39	59	
Potato salad	17	38	55		28	16	44	
Bean salad	43	47	90		2	7	9	
Punch	40	52	92		5	4	9	
Ice cream	20	1	21		25	53	78	

a) Calculate attack rate of gastroenteritis for each food item.
b) What measure of association that can be used to identify the food items that caused outbreak?
c) Calculate this measure for each of the food items.
d) For which food is the measure of association largest?
e) Which of the food items do you think is most likely to have caused this outbreak? Explain your answer?

(10 marks)

SECTION III: LONG ANSWER QUESTIONS

Instructions:

This Section has Two (2) Questions
Answer Both Questions

LAQ 1:
On a Tuesday afternoon, the County Director of Health telephones you. He has just become aware that his sister who attended a wedding party 2 days ago had been vomiting and having diarrhoea since early morning and has been admitted to the sub-county hospital under your jurisdiction. Several family members who attended the party also have similar signs.

a) What would be your case definition? **(2marks)**
b) Discuss the logical steps you would use to investigate the outbreak. **(8 marks)**
c) State the measures you would put in place to control and prevent the disease. **(5 marks)**

LAQ 2:

An outbreak of an acute respiratory disease known as coccidioidomycosis, occurred among volunteers, group leaders, and archaeologists who began working at a Native American archaeological site in Utah on June 18.

a) Using the dates of onset listed below, draw an epidemic curve. **(10 marks)**

Case #	Date of Onset
1	28/6
2	28/6
3	29/6
4	29/6
5	29/6
6	29/6
7	29/6
8	30/6
9	1/7
10	1/7

b) The average incubation period for coccidioidomycosis is 12 days, with a minimum incubation period of 7 days. Using your epidemic curve and the average and minimum incubation periods of the disease, identify the likely exposure period. **(5 marks)**