



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF COMMUNITY HEALTH
MASTER OF PUBLIC HEALTH
END OF SEMESTER EXAMINATION
SUPPLEMENTARY AND SPECIAL EXAM XXX 2026

UNIT CODE: MPH713

UNIT NAME: PRINCIPALS OF EPIDEMIOLOGY

DATE: xxxxxx 2026

TIME: One hour

Start: XXXX Hours

Finish XXXX Hours

INSTRUCTIONS

1. This exam is marked out of 100 marks
2. This Examination comprises TWO Sections

Section A: Compulsory Question (25 marks)

Section B: Long Answer Questions (75 marks): Answer any three

SECTION A: COMPULSORY (25 Marks)

Short Answer Questions (Each question carries 5 marks)

1. Discuss three uses of epidemiology
2. Explain how evaluation and efficacy of health services are conducted in public health
3. Describe how to prevent direct transmission of infectious agents between person-to-person
4. Diseases are rarely caused by a single factor. Describe three practical examples how diseases are transmitted
5. Describe agent characteristics that increase disease transmission in public health

SECTION B: Long Answer Questions (75 marks): Answer any three

Read the passage below and answer the questions that follow

6. A country called Lavanda has an estimated population of 30,000,000 people in 2022 according to the national bureau of statistics. About, 500 individuals reported to the health facilities with

typhus fever disease in the year 2022. This disease is transmitted through the bite of lice. The lice inject the germ that causes typhus fever into the host where it starts to establish itself, multiply and cause fever, headache and backache after 5 days. After one week, the symptoms are so severe that the individual seeks medical care. Untreated, Typhus fever causes serious complications, including low blood pressure, pneumonia, Organ failure, Gangrene and death after 20 days. Based on a survey conducted by Amref International University in 2024, the prevalence of typhus fever disease was 255 per 100,000 population. The study further revealed that the disease causes 15 deaths in every 120 people bitten by lice

- a) Calculate the incidence of typhus fever disease in the year 2022 (5 Marks)
 - b) Calculate the case fatality rate of typhus fever disease (5 Marks)
 - c) Based on the prevalence survey conducted, how many individuals in Lavanda could be suffering from typhus fever disease (5 Marks)
 - d) Draw the natural history of typhus fever disease (from a healthy individual to death) showing stages where prevention measures can be undertaken (10 Marks)
7. A hospital-based case-control study investigated the link between e-cigarette use (vaping) and the development of bronchiolitis obliterans. Researchers recruited 150 patients diagnosed with the condition (cases) and 300 patients admitted for unrelated orthopedic surgeries (controls). Among the cases, 90 reported a history of vaping. Among the controls, 60 reported vaping.
- a) Construct a 2x2 contingency table based on this data (10 Marks)
 - b) Calculate the Odds Ratio (OR) ((10 Marks)
 - c) Interpret the OR (5Marks)
8. Study the table below and answer the questions that follow

Lung Cancer and smoking			
	Lung Cancer?		Total
Smoking	Yes	No	
Yes	120	634	
No	23		2,367
Total	143		3,121

- a) Calculate the cumulative incidence of lung cancer amongst the smokers (5 marks)
 - b) Calculate the cumulative incidence of lung cancer amongst the non -smokers (5 marks)
 - c) Hence, calculate the Relative Risk of developing lung cancer amongst smokers (15 marks)
9. Answer the following questions
- a) Identify any *three models for disease causation* (5 Marks)
 - b) Discuss while giving examples how each of the chosen model explains disease causation (20 Marks)
10. Answer the following questions
- a) Explain why variables are important in measuring disease occurrence (5Marks)
 - b) Identify any five measures of disease occurrence used in epidemiology (5 Marks)

c) Discuss where these measures (picked in **b** above) are applied in epidemiology (15 marks)

