



UNIVERSITI KUALA LUMPUR
INSTITUTE OF MEDICAL SCIENCE TECHNOLOGY

FINAL EXAMINATION
MARCH 2025 SEMESTER

COURSE CODE : HGD20503
COURSE TITLE : EPIDEMIOLOGY & BIostatISTICS
PROGRAMME NAME : DIPLOMA IN ENVIRONMENTAL HEALTH
DATE : 26 JUNE 2025
TIME : 9:00AM - 12:00PM
DURATION : 3 HOURS



INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of TWO sections.
4. Section A consist total of 60 marks. Answer ALL questions.
5. Section B consist of three questions. Answer TWO (2) questions only.
6. Please write your answer on the answer booklet provided.
7. Please answer all questions in English only.
8. Refer to the attached Formula/ Appendies. *Tick if applicable*

THERE ARE 6 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 60 marks)

Answer ALL questions.

Please use the answer booklet provided.

Question 1

Answer all the following questions.

- (a) Differentiate between descriptive and analytical epidemiological studies. Provide one example of each type and explain their purpose.

(10 marks)

- (b) You are assigned to conduct a study on the increase in dengue cases in a local district. Describe how you would first use descriptive epidemiology to understand the problem, and then use analytical epidemiology to investigate potential causes.

(10 marks)

Question 2

Incidence and prevalence are two main parameters in describing epidemiology.

- (a) Explain the difference between incidence and prevalence in epidemiology. Use a suitable example to describe how each is calculated and interpreted in an environmental health study.

(10 marks)

- (b) A study was conducted in a community of 10,000 people. In January, 100 people were already living with diabetes. Between February and December, 200 new cases of diabetes were diagnosed. Calculate and interpret the incidence and prevalence of diabetes at the end of December. Explain the implications for public health planning.

(10 marks)

Question 3

Answer all the following questions.

- (a) Explain the concept of a confounding variable in epidemiological studies. Describe how confounder can affect the interpretation of results and state two methods to control confounding.

(10 marks)

- (b) A study investigates the relationship between alcohol consumption and liver disease. Smoking is suspected to be a confounding variable. Describe how the presence of confounding could be identified during data analysis and explain two statistical methods to control for it.

(10 marks)

SECTION B (Total: 40 marks)

Answer TWO (2) questions only.

Please use the answer booklet provided.

Question 1

Answer all the following questions.

- (a) In a population of 1000 people, 300 are smokers and 700 are non-smokers. If 90 smokers and 70 non-smokers develop lung disease.
- i. The probability that a randomly selected person has lung disease.
(3 marks)
 - ii. The probability that a smoker has lung disease.
(3 marks)
 - iii. Interpret the relationship between smoking and lung disease based on these probabilities (in i and ii).
(4 marks)
- (b) Examine the difference between independent and mutually exclusive events using public health examples, and whether the two events can be both?
(10 marks)

Question 2

A public health officer collects data on the number of dengue cases reported in five districts: 12, 18, 14, 21, and 15.

- (a) Calculate the mean, median, and mode of the dataset. (5 marks)
- (b) Explain what these measures (in a) indicate about the distribution of dengue cases. (5 marks)
- (c) Interpret the significance of standard deviation and interquartile range in summarizing health-related data by providing appropriate examples to support your explanation. (10 marks)

Question 3

Answer all the following questions.

- (a) A health department reports that cases of food poisoning are highest in males aged 20–30 during the summer. Assess how person, place, and time are used in this descriptive epidemiology report. (10 marks)
- (b) A community health survey revealed the following incidence rates of a skin disease per 1,000 population:
Urban areas: 25
Rural areas: 10
- i. Interpret the difference in disease distribution by place. (4 marks)
- ii. Discover at least three possible environmental or behavioral factors that might explain this difference. (6 marks)

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END OF EXAMINATION PAPER

