UNIVERSITY OF ESWATINI

MAIN EXAMINATION PAPER, 2020

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF STATISTICS AND DEMOGRAPHY

COURSE CODE: DEM 412

TITLE OF PAPER: BASIC EPIDEMIOLOGY
TOTAL MARKS: 75

TIME ALLOWED: 2 HOURS

Instructions
1. This paper consists of Section (A) and (B).
2. Section A is compulsory.
3. Answer only one(1) question from Section B.

Special Requirements
Scientific Calculator

Additional Material (s)
None

Candidates may complete the front cover of their answer book when instructed by the Chief Invigilator and sign their examination attendance cards but must NOT write anything else until the start of the examination period is announced.

No electronic devices capable of storing and retrieving text, including electronic dictionaries and any form of foreign material may be used while in the examination room.

DO NOT turn examination paper over until instructed to do so.

SECTION A: Answer All Question

QUESTION 1   [COMPULSORY]   [25 MARKS]

1.1 Name and discuss any two subdivisions that can be used to classify a cause in epidemiology [4]

1.2 Temporality and specificity are some of the elements considered to differentiate association from a cause. List and discuss any three (3) other elements that should be considered to differentiate association from a cause   [9]

Table 1.1: A sample study of bicycle helmets and head injury

	Cases	Controls	Total
No exposed	67	140	207
Unexposed group	31	126	157
Total	98	266	364

Based on **table 1.1,** calculates and interprets the following:

1.3 What is the Odds ratio for the association between not wearing a helmet and head injury? [3]

1.4 What percentage of head injuries occurring among the children not wearing a helmet could be attributed to the fact that they were not wearing a helmet?   [3]

1.5 What proportions of the control children were not wearing a helmet?   [3]

1.6 What percentage of all bicycle related head injuries in children could be attributed to not wearing a helmet?   [3]

QUESTION 2   [COMPULSORY]   [25 MARKS]

2.1   For each of the following scenarios, calculate a measure of the incidence of the disease, and identify what type of measure it is:

2.1.1 A 1000 health women were followed for 8 years, and 15 developed high blood pressure. [3]

2.1.2 A large group of elderly men was followed for a total of 5000 person years, and 75 of the men had a stroke during the duration of the study.   [3]

2.1.3 In a community with a population of 50000 people, 27 developed diabetes during one year. [3]

2.2 A sample study, 2000 women aged 55 years were given a health check-up, and 100 were found to have high blood pressure. Ten years later all 2000 women attended a second health check-up and another 300 women had developed a high blood pressure.

2.2.1 What was the prevalence of high blood pressure in the women i) at age 55 ii) at age 65   [3]

2.2.2 How many women were at risk of developing high blood pressure at the start of the ten years.   [3]

2.2.3 What was the incidence of high blood pressure in these women? Is this a measure of cumulative incidence or an incidence rate?   [3]

2.2.4 Assume that, on average, each of the 300 women who developed high blood pressure did so halfway through the 10 years follow- up period. Calculate the total number of person years at risk of developing high blood pressure during the 10 years.   [4]

2.2.5 What was the incidence rate of high blood pressure in these women?   [3]

SECTION B: Answer any one (1) Question

QUESTION 3   [25 MARKS]

3.1 List two objectives of epidemiology   [3]

3.2 With the aid of a diagram explain the dynamics of disease transmission using the epidemiological triangle   [8]

3.3 Discuss five steps you can follow when investigating the outbreak of the novel Coronavirus (COVID-19)   [10]

3.4 Discuss the conditions for herd immunity   [4]

OR

QUESTION 4   [25 MARKS]

4.1 With the aid of a diagram discuss any two study designs that can be used in epidemiological studies   [8]

4.2 List two (2) strengths and two (2) limitations of a case study   [4]

4.3 Using a cohort study design explain how a researcher can estimate the incidence of diarrhea among children under-five years in the kingdom of Eswatini. You can use a diagram to illustrate your answer   [9]

4.4 What is blinding, and why is it important in social science research?   [4]

End