UNIVERSITY OF ESWATINI

DEPARTMENT OF STATISTICS AND DEMOGRAPHY

MAIN EXAMINATION 2019

TITLE OF PAPER	:	BASIC EPIDEMEOLOGY
COURSE CODE	:	DEM 412
TIME ALLOWED	:	TWO (2) HOURS
TOTAL MARKS	:	75
INSTRUCTIONS	:	ANSWER QUESTION 1 AND ANY TWO (2) QUESTIONS. SHOW ALL YOUR WORKING WHERE APPLICABLE.
REQUIREMENT	:	SCIENTIFIC CALCULATOR

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

Question 1 [COMPULSORY] **[25 marks]**

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

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

Table 1: A case control study of bicycle helmets and head injury

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

c. Based on table 1 calculates and interprets the following:

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

ii. 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]

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

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

Question 2 **[25 marks]**

a. List three objectives of epidemiology [3]

b. With an aid of a diagram explain the dynamics of disease transmission using the epidemiological triangle [12]

c. Discuss five steps in investigating a disease acute outbreak [10]

Question 3 **[25 marks]**

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

i. A thousand health women were followed for 8 years and 15 developed high blood pressure [3]

ii. 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]

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

b. Two thousand women aged 55 years were given a health check and 100 were found to have high blood pressure. Ten years later all 2000 women attended a second check and another 300 women had developed high blood pressure

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

ii. How many women were at risk of developing high blood pressure at the start of the ten year period [3]

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

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

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

Question 4 **[25 marks]**

a. Discuss any four study designs that can be used in epidemiological studies [16]

b. Explain herd immunity and why does it occur? [4]

c. Using a clear example and epidemiological theory explain why does a disease develop in some people and not in others? [5]