UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF COMMUNITY HEALTH NURSING SCIENCE

FINAL EXAMINATION: MAY 2018

COURSE TITLE: COMMUNITY HEALTH NURSING IV (EPIDEMIOLOGY)

COURSE CODE: NUR 521

TIME ALLOCATED: 2 HOURS

MARKS ALLOCATED: 75

INSTRUCTIONS:

1. ANSWER ALL QUESTIONS

2. USE THE PROVIDED ANSWER BOOKLET FOR ALL YOUR ANSWERS

3. START ALL QUESTIONS ON A NEW PAGE

4. USE BULLETS TO EXPRESS EACH POINT IN YOUR ANSWERS (DO NOT INVENT YOUR OWN NUMBERING)

5. CHECK THAT YOUR QUESTION PAPER HAS 5 PRINTED PAGES

6. DO NOT OPEN THE QUESTION PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

QUESTION 1

For each of the following statements, in your answer booklet, write "T" for True and "F" for False.

1.1 Epidemiology is the cornerstone of medical practice

1.2 Analytic epidemiology is designed to test hypotheses about associations between the exposure of interest and the outcome

1.3 The best way to ensure comparability of the groups in case-control studies is to randomize

1.4 Similar to cohort studies, randomized clinical trials can be conducted either retrospectively or prospectively

1.5 In epidemiological research, external validity is more important than internal validity

1.6 Epidemiologists believe that disease does not occur at random in populations

1.7 Loss to follow-up in randomized controlled trials can increase the probability of a type II error

1.8 Case fatality is a measure of the risk of dying from a disease in a population

1.9 In epidemiology, there is a difference between cumulative incidence and incidence density

1.10 Epidemiology is concerned with the discovery of new modes of treatment for diseases.

[Total: 10 marks]

QUESTION 2

2.1 Define publications bias. [2]

2.2 Explain three (3) factors that account for publication bias of results from randomized controlled trials. [6]

2.3 Explain the main problem that may rise if publication bias of results from randomized controlled trials is not curbed. [2]

2.4 State one way in which the issue of publication bias has been addressed in epidemiology. [1]

2.5 Mention four types of comparison groups that can be used in quasi-experimental studies. [4]

[Total: 15 marks]

QUESTION 3

3.1 Two thousand women aged 55 years were given a health check and 100 were found to have high blood pressure. Ten years later all 2 000 women attended a second check and another 300 women had developed high blood pressure.

    3.1.1 What was the prevalence of high blood pressure in the women at age 65?   [3]

    3.1.2 What was the incidence of high blood pressure in these women?   [4]

3.2 Now, assume that, on average, each of the 300 women developed high blood pressure half way through the 10 year follow-up period. Calculate the incidence rate of high blood pressure among these women.   [5]

3.3 A prevalence survey conducted from January 1 through December 31, 2017, identified 1 000 cases of schizophrenia in a city of 2 million people. The incidence rate of schizophrenia in this population is 5/100 000 persons each year. What percent of the 1 000 cases were newly diagnosed in 2017?   [3]

3.4 In an African country with a population of 500 000 people, 60,000 deaths occurred during the year ending 31 December 2013. These included 3, 000 deaths from cholera in 10,000 people who were sick with cholera.

    3.4.1 What was the mortality rate from cholera in 2013?   [3]

    3.4.2 What was the case-fatality from cholera in 2013?   [3]

    3.4.3 What was the proportionate mortality from cholera in 2013?   [3]

    3.4.4 Explain how the answer you got in 2.4.2 is different from the one in 2.4.3.   [1]

[Total: 25 marks]

QUESTION 4

4.1 There are two methods commonly used to screen for prostate cancer: PSA (a blood test), and digital rectal exam (DRE). Researchers used the PSA method to support a diagnosis of prostate cancer in 1 800 men who had been previously diagnosed with prostate cancer using DRE and in 2 500 control men. The results of the blood test were positive in 1 950 of the cases and in 805 control men.

    4.1.1   Express the data described in the paragraph above in a 2x2 table   [4]

    4.1.2   What was the sensitivity of the blood test?   [3]

    4.1.3   What was the specificity of the blood test?   [3]

    4.1.4   What was the positive predictive value of the blood test?   [3]

    4.1.5   Is the blood test more likely to correctly classify those with disease or those without disease? Justify your answer.   [2]

    4.1.6   Would you prefer having a blood test that is higher in sensitivity or one that is higher in specificity? Justify your answer.   [3]

    4.1.7   Explain the impact of having a high number of false negatives in a population.   [3]

4.2 In a prospective cohort study, 100 participants were asked to fill-in a questionnaire describing their mental status using a set of symptoms. Two community health nurses (CHN) were asked to classify the participants as abnormal or normal, independently. The comparison of their classification is shown in the following table:

Table 1: Classification by Community Health Nurse (CHN) 1 Compared with CHN 2

CHN 1	CHN 2		Total
	Abnormal	*Normal*	**Total**
Abnormal	40	20	60
Normal	10	30	40
Total	50	50	100

4.2.1 Calculate the percent positive agreement between the two psychologists [3]

4.2.2 Assuming that the answer in 3.2.1 was a Kappa statistic, what would be your classification of the agreement? [1]

[Total: 25 marks]