

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS  
THIRD YEAR EXAMINATION FOR THE AWARD OF  
BACHELOR OF SCIENCE (NURSING)**

**NURS 373: EPIDEMIOLOGY AND DEMOGRAPHY.  
STREAMS: Bsc N. (Y3S2)**

**TIME: 2 HRS**

**DAY/DATE:.....**

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**INSTRUCTIONS:**

- Do not write anything on the question paper.
- Mobile phones and any other reference materials are NOT allowed in the examination room.
- The paper has THREE sections. Answer ALL questions
- Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.

## MCQS (5Mks)

1. You are computing the crude rate of your municipality, with a total population of about 18,000 for last year. There were 94 deaths. Among those who died, 20 died because of diseases of the heart and 32 were aged 50 years or older. What is the crude death rate?

- A. 4.1/1000
- B. 5.2/1000
- C. 6.3/1000
- D. 7.3/1000

2. What numerator is used in computing general fertility rate?

- A. Estimated midyear population
- B. Number of registered live births
- C. Number of pregnancies in the year
- D. Number of females of reproductive age

3. Researchers prospectively follow a group of 100 vegetarians and 200 non-vegetarians. After 30 years of follow-up, 8 of the vegetarians and 20 of the non-vegetarians develop heart disease. The 95% confidence interval on the relative risk of 0.8 ranges from 0.6 to 0.9.

*Select the best statement.*

- a. Vegetarians were 80% less likely to develop heart disease during 30 years of follow-up compared with non-vegetarians.
- b. The researchers should have calculated an odds ratio rather than a relative risk.
- c. The relative risk of 0.8 is not statistically significant as the 95% confidence interval contains the value 0.8.
- d. Vegetarians were 20% less likely to develop heart disease during 30 years of follow-up compared with non-vegetarians.

4. Which of the following is a natality rate?

- A. Crude birth rate
- B. Neonatal mortality rate
- C. Infant mortality rate
- D. General fertility rate

5. In the past year, Province A had an average population of 1655. 46 babies were born in that year, 2 of whom died less than 4 weeks after they were born. There were 4 recorded stillbirths. What is the neonatal mortality rate?

- A. 27.8/1000
- B. 43.5/1000
- C. 86.9/1000
- D. 130.4/1000

### SHORT ANSWER QUESTIONS. (45Mks)

1. Outline four (4) uses of vital statistics in epidemiology. (4mks)
2. Explain three broad uses/applications of epidemiology in disease prevention and control (9mks)
3. Describe any three (3) types of community assessment (6mks)
4. **Using chain of infection**, briefly explain the interventions you would put in place to minimize spread of malaria in a malaria endemic zone. (6mks).
5. Describe the concept of “**Natural history of disease**” and its application in disease prevention. (6mks)
6. With the aid of a diagram explain the concept of Demographic transition. (6mks)
7. An outbreak is suspected following consuming “contaminated samosa” in a restaurant in the nearby town. 52 people who ate in the restaurant in question turn out in your facility with “food poisoning”, 40 of whom confirm consuming samosa. You are also able to trace 35 other people who ate in the same restaurant the same day but did not suffer from food poisoning and 11 of them gives history consuming samosa. As an epidemiologist you are interested in finding out whether samosa really caused food poisoning.
  - a.) Draw the 2X2 contingency table showing the disease and exposure. (2mk)
  - b.) Calculate the odds ratio of developing food poisoning between the two groups. (Show your work.) (3mks)
- C. Explain the interpretation of your results giving reasons. (3mks)

### LONG ANSWER QUESTION (20MKS)

1. Discuss both descriptive and analytical studies and their use in epidemiology. (20mks).