*"Investing in Africa's Future"*

**COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES**

**DEPARTMENT OF PUBLIC HEALTH AND NURSING (DPHN)**

**NSNS 401: INTRODUCTION TO EPIDEMIOLOGY, BIOSTATISTICS AND INFORMATICS (BSN)**

**END OF FIRST SEMESTER EXAMINATIONS**

**NOV/DEC 2023**

**LECTURER: MR. E. CHIKAKA**

**DURATION: 3 HOURS**

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# INSTRUCTIONS

ANSWER **ALL** QUESTIONS FROM SECTION A AND **ANY THREE (3)** FROM SECTION B

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THE MARK ALLOCATION FOR EACH QUESTION IS INDICATED AT THE END OF THE QUESTION

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CREDIT WILL BE GIVEN FOR LOGICAL, SYSTEMATIC AND NEAT PRESENTATION

**SECTION A [40 MARKS]**

**QUESTION 1**

List and explain the key features and uses of:

i. Descriptive epidemiology [5]

ii. Analytic epidemiology [5]

**QUESTION 2**

A sample of 10 individuals is selected for participation in a study of cardiovascular risk factors. The following data represent the ages of the enrolled individuals measured in yeas (continuous variable). The data are as follows:

65 63 62 59 57 56 53 43 48 55

(i) Find the sample mean, standard deviation and standard error of the mean. Interpret the standard deviation of the mean [8]

(ii) Explain when you would use the median instead of the mean as a measure of central tendency? [2]

**QUESTION 3**

A case-control study was done to determine the association between the use of aspirin and a suspected adverse effect. 200 cases and controls each were recruited. Among the cases, 190 had used aspirin before, while it was 130 for the controls.

a) Present the results in a two-by-two table [4]

b) Calculate Odds Ratio [3]

c) Interpret the results [3]

**QUESTION 4**

What do you understand by Health Informatics and what are its key features. [10]

**SECTION B [60 MARKS]**

**Answer any 3 (Three) QUESTIONS**

**Question 5**

a. In a cervical cancer screening programme, pap smears were collected from 12,350 women aged between 25-45 years of age. Among these women, 1250 were known to have pre-cancer lesions. All pap smears were processed in reputable cytology laboratory and 1235 (650 from women with pre-cancer lesions) were reported to be abnormal.

i) Put the above data in a 2X2 table [4]

ii) Calculate the sensitivity and specificity of the pap smear [4]

iii) Calculate the predictive value positive (PVP) and predictive value negative (PVN) of the Pap smear [4]

iv) Would you recommend that the Pap smear be used for cervical screening in this population? [3]

b. What are the principles of Public Health Informatics? [5]

**QUESTION 6**

a. Distinguish with examples the different types of scales of measurement and how each type is presented. [6]
b. Define public health surveillance and list the essential activities and desirable characteristics of well-conducted surveillance activities [8]

c. Health Informatics is the overarching theme for all informatics used in healthcare. The two main sub-disciplines are: – Clinical Informatics – Population Health Informatics. Discuss [6]

**QUESTION 7**

a. Summarize the historical evolution of epidemiology [5]

b. List and explain the key features and uses of:
   i.) Descriptive epidemiology [5]
   ii.) Analytic epidemiology [5]
c. List and describe any 5 subsets of Health Informatics [5]

**QUESTION 8**

a. What do measures of central tendency and variation indicate? Describe the important measures of central tendency and variation pointing out the situation when one measure is considered relatively appropriate in comparison to other measures. [10]
b. In a community of 800 households with a population of 4799 health workers found 120 persons with scabies. A total of 480 persons lived in the 80 affected households. Assuming that each household had only one primary case, calculate the secondary attack rate [5]
c. Describe various ways in which Health Informatics has evolved to improve quality or enhance patient safety. [5]