JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMMUNITY DEVELOPMENT AND PUBLIC HEALTH

3RD YEAR 2ND SEMESTER 2019/2020 ACADEMIC YEAR

KISUMU / KISII CAMPUS

COURSE CODE: SBI 3326

COURSE TITLE: BIOSTATISTICS I

EXAM VENUE: **STREAM: (BSc. CD & PH)**

DATE: 3/5/19 **EXAM SESSION: 12.00 – 2.00PM**

TIME: 2.00 HOURS

Instructions:

1. **Answer all the questions in Section A and ANY other 2 questions in Section B.**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A: Answer ALL questions in this section (30 marks)

1. Define the following
    a. Biostatistics (2 marks)
    b. Inference (2 marks)
    c. Variables (2 marks)
    d. Frequency distributions (2 marks)
2. List three (3) measures of central tendency and three (3) measures of dispersion (2 marks)
3. Distinguish between
    a. Discrete and continous variables (2 marks)
    b. Mean and median (2 marks)
    c. Event and trial (2 marks)
    d. Interval and ratio scale (2 marks)
4. What is the probability of selecting 3 boys in a family of 5. (3 marks)
5. List two (2) examples of discrete probability distributions and two (2) examples of continous probability distributions (2 marks)
6. Find the harmonic mean for the following dataset of systolic blood pressure measured from 7 expectant mothers: 126, 143,100, 117, 132, 118, 122 (3 marks)
7. Give two (2) methods in descriptive statictics through which you can
    a. Organize your data (2 marks)
    b. Summarize your data (2 marks)

SECTION B: Answer any 2 Questions in this section (40 marks each)

1.
    a. Define probability (2 marks)
    b. Differentiate between an experiment and an outcome (4 marks)
    c. In a large survey of 100,000 births in Nyanza province, it was observed that the incidence rate of birth asphyxia deaths was 298 per 100,000 births. In a random sample of 48 births from this population. What is the probability that:
        i. No fatal case is observed (3 marks)
        ii. Only one (1) fatal case is observed (3 marks)
        iii. There were two or more fatal cases (5 marks)

iv. Calculate the mean and the standard deviation (3 marks)

2.

a. List the steps you would follow when constucting a frequency distribution table (5 marks)

b. The following are weights (in Kilograms) of patients who visited Bondo sub-county hospital reporting acute respiratory illness in the month of April, 2016.

99	56	72	66	78	102	88	65	58	62
87	91	58	97	100	57	97	69	78	70
86	91	74	63	59	51	66	52	60	46
73	52	49	67	75	88	92	90	80	79
43	87	82	52	63	68	104	101	41	82
87	90	71	60	72	49	55	76	96	77

i. What is the number of intervals (2 marks)

ii. What is the width of the intervals (2 marks)

iii. Construct a frequency distribution table (4 marks)

iv. Calculate the mean, median, mode and Standard deviation (7 marks)

3.

a. List four (4) properties of the normal distribution (4 marks)

b. Differentiate between

i. Pie chart and a bar graph (2 marks)

ii. Arithmetic mean and geometric mean (2 marks)

iii. Binomial and poison probability distributions (2 marks)

c. Twelve (12) patients visiting the school dispensary reported the following temperatures

36.8	35.7	39.2	35.9	36.6	36.2	37.0	38.2	35.7	34.9	35.2	36.0

Calculate the mean, mode, median, variance, and the range (7 marks)

d. State three (3) properties of the median (3 marks)

4.

a. Differentiate between quantitative and qualitative variables (4 marks)

b. In a study conducted on 6,732 primary school children living along the shores of lake Victoria in 2014, it was observed that 2891 childred were infected by schistosomes, 1852 were not infected and the remaining children did not submit their specimens for testing.

i. How many children did not submit their specimens (2 marks)

ii. List three (3) ways of presenting the above data (3 marks)

iii. Present the data using two (2) of the listed ways in part ii above (8 marks)

iv. Which of the three (3) ways of presentation mentioned in part ii above do you find most informative? Why? (3 marks)