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 2018/2019 ACADEMIC YEAR

KISUMU CAMPUS

COURSE CODE: **SBI 3326**

COURSE TITLE: **BIOSTATISTICS I**

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

DATE: **EXAM SESSION:**

TIME:

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. State two ways through which we can organize data (2 marks)
3. Distinguish between
    a. Discrete and continuous variables (2 marks)
    b. Mean and median (2 marks)
    c. Event and trial (2 marks)
4. In a certain class in JOOUST, consisting of 80 ladies and 60 gents, it is observed that 42 ladies and 25 gents wear eyeglasses. If a student is picked at random from this class;
    a. What is the probability that the student wears eyeglasses (1 mark)
    b. What is the probability of the joint occurrence of the events of wearing eyeglasses and being a boy? (2 marks)
5. List two (2) examples of discrete probability distributions and two (2) examples of continuous 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. Outline the steps you would use in developing a stem and leaf display (3 marks)
8. What is the probability of selecting 3 boys in a family of 5. (3 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 a sample space (4 marks)
    c. In a large survey of 100,000 births in Nyanza province, it was observed that the incidence rate of sepsis deaths was 572 per 100,000 births. In a random sample of 92 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 Nyando sub-county hospital reporting acute respiratory illness in the month of April, 2016.

73	52	49	67	75	88	92	90	80	79
87	90	71	60	72	49	55	76	96	77
43	87	82	52	63	68	104	101	41	82

48	75	68	72	85	57	97	69	59	70
86	91	74	63	59	51	66	52	60	46
99	56	72	66	78	102	88	65	58	62

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 three (3) properties of mean (3 marks)
b. Differentiate between
   i. A right skewed and left skewed distribution using a sketch (2 marks)
   ii. Arithmetic mean and geometric mean (2 marks)
   iii. Binomial and poison probability distributions (2 marks)
c. Fourteen (14) patients visiting Dr. Patel's clinic reported the following systolic blood pressure levels

121	100	89	140	115	112	121
132	108	115	119	105	135	113

Calculate the mean, mode, median, variance, and the range (7 marks)
d. State four (4) properties of the normal distribution (4 marks)

4.

a. Differentiate between descriptive and inferential statictics (4 marks)
b. In a study conducted on 9,732 primary school children living along the shores of lake Victoria in 2014, it was observed that 3591 childred were infected by schistosomes, 2759 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)