



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF HEALTH SCIENCES
UNIVERSITY EXAMINATION FOR DIPLOMA IN COMMUNITY HEALTH AND
DEVELOPMENT
2ND YEAR 2ND SEMESTER 2018/2019 ACADEMIC YEAR
KISUMU LEARNING CENTRE

COURSE CODE: HDC 2223

COURSE TITLE: INTRODUCTION TO BIOSTATISTICS

EXAM VENUE: KISUMU LEARNING CENTRE

DATE: 13/08/19 EXAMINATION SESSION: 9.00 – 10.30AM

TIME: 1.30 HOURS

Instructions:

- 1. Answer all the questions in Section A and ANY other two 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 (30 Marks)

1. Define the following terms: (2 Marks)
 - (i) Biostatistic
 - (ii) Parameter
 - (iii) Polygon
 - (iv) Probability
2. Giving example in each case, identify the levels of measurements. (5 Marks)
3. A family has 5 children. Show that the probability of getting 0 boys, 1 boy, 2 boys, 3 boys, 4 boys or 5 boys is 1. (3 Marks)
4. A married couple has 4 children. $P(\text{Boy}) = 0.249$ What is the Probability of them having 2 boys and 2 girls? (2 Marks)
5. Suppose that a manufactured product has 2 defects per unit of product inspected. Using Poisson distribution, calculate the probabilities of finding a product without any defect, 3 defects and 4 defects. (2 Marks)
6. Calculate the mean, variance, the standard deviation, SEM and the coefficient of variation of the data below:
17, 28, 21, 11, 92, 19, 11, 2, 3, 4, 8 (12 Marks)
7. State TWO characteristics of a normal distribution (2 Marks)
8. Identify TWO methods of presenting data (2 Marks)

SECTION B

Answer any two Questions (30 Marks)

Question 7. The following is a hypertension levels data collected from a given population of individuals.

Group	F_i
9.1-10.0	13
10.1-11.0	29
11.1-12.0	76
12.1-13.0	289
13.1-14.0	84
14.1-15.0	29
15.1-16.0	40

Determine the following;

- (a) Mean (4 Marks)
- (b) Standard error (4 Marks)
- (c) Standard deviation (8 Marks)
- (d) COV (4 Marks)

Question 8. John conducted a study to assess physician attitudes towards average weight of patients. The physician was asked to indicate how much time she believed she would spend with the patient. Packets were randomly assigned to physicians. Time estimates for the average group are provided below.

Average Weight	No.
15-20	8
21-25	1
26-30	19
36-40	4
41-40	4
46-50	2

- i. Construct a frequency histogram for this group. (6 Marks)
- ii. Based on your visual inspection of the histograms constructed in conjunction with a question (a), would you say the data are skewed? If so, positively or negatively?
(2 Marks)
- iii. Calculate the standard deviation of this group. (7 Marks)
- iv. Calculate the standard error of this group. (3 Marks)
- v. Calculate the Coefficient of Variation of this group. (2 Marks)

Question 9.

A test in Biostatistics in Diploma (Community health and development) at JOOUST gave the following results.

Marks	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Frequency	3	7	15	18	22	17	14	9	5

- a. Determine i) Mean
ii) Median
iii) Standard deviation
iv) COV and SEM
- b. Draw a bar graph to represent this information
- c. Draw a histogram and a frequency polygon to represent this information
- d. State the differences between a bar graph and a histogram.

Question 10.

- a) in a family of 3, find the probability of getting a boy
- b) in the same family of 3, what is the probability that all boys are expected
- c) The test contains ten questions, each one with available four different answers, among which just one is correct. To pass the test at least five questions must be answered correctly. What is the probability that a completely unprepared student will pass the test?
 - i. What is the probability of throwing one dice and get:
 - a) the even number
 - b) the number divisible by three
 - c) the number less than six?
- d) In the class of 30 students, seven of them don't have done the homework. The teachers choose randomly six students. What is the chance that at least four of them have done their homework?
- e) In the lottery, six numbers are drawn out of 49. What is the probability of winning
 - i) the second prize (we guessed five numbers correctly)
 - ii) the third prize (we guessed four numbers correctly)
 - iii) if we were guessing just six numbers?