



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR
THIRD YEAR END OF FIRST SEMESTER**

**SCHOOL OF SCIENCE AND INFORMATION
SCIENCES**

FOR

**THE DEGREE OF BACHELOR OF SCIENCE, BACHELOR OF WILDLIFE
MANAGEMENT, BACHELOR OF ANIMAL HEALTH AND PRODUCTION AND
BACHELOR OF ENVIRONMENTAL SCIENCE, BIOLOGY AND HEALTH**

COURSE CODE: ZOO 3128/BOT 3128

COURSE TITLE: BIostatISTICS

DATE: 11TH DECEMBER, 2019

TIME: 0830-1030HRS

INSTRUCTIONS TO CANDIDATES

1. Answer all the questions in section A and any other two questions from section B.
2. Illustrate your answers with suitable diagrams and give examples wherever necessary.

SECTION A: Answer all the questions

1. We've just started a new educational TV program that teaches viewers all about research methods. We know from past educational TV programs that such a program would likely capture 2 out of 10 viewers on a typical night. Let's say we want to be 99% confident that our obtained sample proportion of viewers will differ from the true population proportions by not more than 5%. What sample size do we need? (3 marks)
2. Determine the median for the following data set: 35 26 46 24 24 22 35 54 12 25 16 26 11 31 16 28 17 20 25 18 20 27 17 0 12 24 16 31 7 6 25 20 20 21 23 7 7 7 12 21 (3 marks)
3. If I toss a coin 20 times, what's the probability of getting 2 or fewer heads? (3 marks)
4. Eggs are packed into boxes of 500. On average 0.7% of the eggs are found to be broken when the eggs are unpacked. Find the probability that in a box of 500 eggs, at least two are broken. (3 marks)
5. Outline the various applications of a Chi square (3 marks)
6. Describe the advantages of using non-parametric methods (3 marks)
- a) A certain drug is claimed to be effective in curing flu. In an experiment of 160 persons, a half of them were given the drug and half given sugar pills. The patient reaction to the treatment is as follows: of the patients on test drug, 52 were cured, 10 got worse and 18 showed no change. Of the patients who were on sugar pills, 44 were cured, 10 got worse and 26 showed no change. Construct a 2X3 table of results for the patients on the different treatment (3 marks)
7. The following scores represent nurse's assessment (x) and physician's assessment (y) of the condition of 10 patients at a time of admission to a trauma centre.

X	18	13	18	15	10	12	8	4	7	3
Y	23	20	18	16	14	11	10	7	6	4

Plot a scatter diagram of x and y (3 marks)

8. Describe briefly the process of sampling (3 marks)
9. Give situations where poisson distribution is applicable (3 marks)
10. Distinguish between categorical and continuous variables (3 marks)

SECTION B: Answer any 2 questions

11. The following data represent scores of 50 students in a statistics test.

72 72 93 70 59 78 74 65 73 80
 57 67 72 57 83 76 74 56 68 67
 74 76 79 72 61 72 73 76 67 49
 71 53 67 65 100 83 69 61 72 68
 65 51 75 68 75 66 77 61 64 74

- Prepare the frequency distribution table and the frequency histogram for this data set .
- Compute the sample mean, sample median, sample range interquartile range and sample variance. (20 marks)

12. The following data shows the results of test two random samples of patients weights in kgs.

Group I	62	70	65	57	60	66	59	68
Group II	72	60	58	67	67	56	69	64

Test the hypothesis that the two groups of patients differ in weight using the mann-

whitney U-statistic. (Note: $U = \min(U_1, U_2); U = n_1 n_2 + \frac{n_1 + 1}{2} n_2 - \sum R_1$) (Note U=10 for

$n_1 = 7, n_2 = 8, p = 0.05$) Interpret your results (20 marks)

13. a) Distinguish between correlation and regression analysis (4 marks)

b) Nineteen students were assigned to different diets. Among the variables measured were 24 hour NH_4 and it was required to see how this was related to protein intake (in grams) and fat in take.

Student	NH+4	Protein (g)	Student	NH+4	Protein (g)
1	42	94	11	58	117
2	78	85	12	31	41
3	46	118	13	40	53
4	31	43	14	58	89
5	17	42	15	33	39
6	91	96	16	63	101
7	48	100	17	45	97
8	39	34	18	17	43
9	74	89	19	40	41
10	42	20			

Calculate Pearson's correlation coefficient, r and interpret your results (16 marks)

14. A random sample of 10 boys had the following IQ: 70, 120, 110, 111, 88, 83, 95, 98, 107, 100. Do these data suggest the assumption of a population mean IQ of 100? (Note: 't' critical value with DF 9, p 0.05 is 2,262). (20 marks)

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