

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE

SUPPLEMENTARY EXAM

BOTA 302: BIOSTATISTICS

STREAMS: BSC (BOTA)

TIME: 2 HOURS

DAY/DATE: MONDAY 16/11/2020

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

- Answer all the questions in section A and any TWO question in section B
- Do not write anything on this paper
- Use of calculator is allowed

SECTION A (30 MARKS): ANSWER ALL QUESTIONS

QUESTION ONE – 30 MARKS (COMPULSORY)

- (a) (i) List the characteristics of a good questionnaire (4 marks)
- (ii) Outline the rules to be observed when selecting a sample size. (2 marks)
- (b) Outline the stages in sampling process. (3 marks)
- (c) Outline data presentation methods. (4 marks)
- (d) Using an appropriate non-parametric test, at a 5% level of significance, determine if the two raking of a given milk product by students are significantly different. (6 marks)

Student	1	2	3	4	5	6	7	8
Product 1	13	19	20	11	16	19	18	23
Product 2	17	22	17	14	14	21	17	24

- (e) It is expected that the distribution of certain disease in a given population is 3:1:1 for under 16, 16-25 and over 25 years. A random sample of 400 individuals was taken and 240 individuals were under 16, 60 were between 16-25 while the rest were over 25 years. Does the observed information agree with the expected ratios at 5% significance level? (6 marks)

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- (f) The population of the medicinal herbs is divided into five strata such that $N_1=650$, $N_2=480$, $N_3=360$, $N_4=1000$ and $N_5=1300$. Show how a sample size of $n=280$ should be allocated to the five strata if proportionate sampling was adopted. (5 marks)

SECTION B (40 MARKS): ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

Using the following data set, calculate the mean, mode, median, standard deviation coefficient of variation and Pearson measure of skewness of successive sale of a given firm.

Number of sales	0-5	6-11	12-17	18-23	24-29	30-35
Number of salesmen	2	18	38	56	44	28

QUESTION THREE (20 MARKS)

- (a) Using the following data fit a regression model and obtain a correlation coefficient.

(12 marks)

x	1	2	3	4	5	6	7
y	9	16	19	27	38	43	58

- (b) The Performance of third years' students in BOTA 302 is normally distributed with a mean of 57% and a standard deviation of 8. If a student is randomly selected from the class, what is the probability that the student score lies between 61 and 78%? (8 Marks)

QUESTION FOUR (20 MARKS)

Using the following data, perform analyse of variance and test if the four treatments are significantly different at 5% significance level.

Treatments	Replicate 1	Replicate 2	Replicate 3
A	11	11	9
B	15	9	10
C	14	9	12
D	8	10	9