

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN NURSING

NURS 393: BIostatISTICS

STREAMS: B.Sc NURSING Y3S2

TIME: 2 HOURS

DAY/DATE: THURSDAY 7/12/2017

11.30 A.M - 1.30 P.M.

INSTRUCTIONS:

- Answer all Questions in Section I and TWO Questions in Section II
- Use of calculators and statistical tables is allowed
- Do not write anything on the question paper

SECTION I [30 MARKS]

1. Explain the following terms as used in epidemiology statistics. [6Marks]
 - (a) Prevalence
 - (b) Incidence
 - (c) Mortality rate
2. (a) Describe the steps in a statistical survey. [6 Marks]
(b) Differentiate between stratified random sampling and cluster random sampling. [4 Marks]
3. (a) In an outbreak of tuberculosis among prison inmates in Kamiti Maximum Prison in 2012, 28 of 157 inmates residing on the East wing of the dormitory developed tuberculosis compared with 4 of 137 inmates residing on the West wing. Calculate the risk ratio. [4 Marks]
(b) Using the following data, calculate the vaccine effectiveness from the varicella. [4 Marks]

	Varicella	Non-case
Vaccinated	18	134
unvaccinated	3	2

4. A hospital pharmacist routinely test the quality of drugs supplied by four companied, (A, B C and D). For testing purpose, he instructed his assistance to spread the order among the four companies A, B, C and D in the ratio of 5:4:2:1, respectively. As a spot check, 48 purchase orders were randomly selected from the last 6 months while the order was still in place and the company A, B, C and D has supplied 24, 11, 7 and 6 orders, respectively. Does this

indicate that the instructions were followed? Test at 5% probability level.
[6 Marks]

SECTION II [40 MARKS]

5. The following data was obtained from an experiment conducted to investigate effects of anthropogenic increase in air pollution on incidence of four diseases in a certain locality

Block/Diseases	Disease A	Disease B	Disease C	Disease D
Block 1	12	16	25	20
Block 2	13	17	26	19
Block 3	15	14	22	18
Block 4	22	15	19	19

Perform analyse of variance and test if the incidence of four diseases are significantly different at 5% significant level. [20 Marks]

6. (a) The following weight gains were obtained before and after taking a certain diet

Person	1	2	3	4	5	6	7	8
Before	130	190	200	110	160	190	180	230
After	170	220	170	140	140	210	170	240

At 5% level of significance, determine if there is significant change in weight gain before and after the diet implementation. [5 Marks]

(b) An experiment was carried out to determine the number of outpatients in a certain hospital. A random sample of 64 patients' records was selected and the sample mean was obtained as 55 patients. Construct a 95% confidence interval for the population mean. [3 Marks]

(c) Using the following data fit a regression model and obtain a correlation coefficient. [12 Marks]

x	10	11	12	13	14	15	16
y	19	26	29	30	38	43	48

7. The following data set was obtained from a survey of a certain disease in a given locality. Using the data provided, calculate the mean, mode, median, standard deviation coefficient of variation (CV) and Pearson measure of skeweness (PSK) of the number of person infected by the disease. Comment on PSK and CV obtained. [20 Marks]

Age (years)	0-10	11-21	22-32	33-43	44-54	55-65
Number of persons infected	6	22	44	58	46	32

.....