CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN NURSING (UPGRADING)

NURU 229: BIOSTATISTICS

STREAMS: BSC NURSING-UPGRADING Y2S2   **TIME: 2 HOURS**

DAY/DATE: TUESDAY 04/12/2018   **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:
- **Answer all the 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 experimental designs.   (8 marks)

  (a)   Randomisation
  (b)   Replication
  (c)   Treatment
  (d)   Factor

2.   (a)   Describe the stages in sampling process.   (6 marks)

  (b)   Outline the characteristics of a good questionnaire.   (4 marks)

3.   An experiment was carried out to determine the height of new born babies in a given hospital. A sample of 49 babies was selected and the sample mean height was obtained as 50 cm. The population standard deviation is known to be 6 cm. Construct a 95% and 99% confidence interval for the population mean.   (6 marks)

4.   It is expected that the preference of pills and IUD as family planning methods in a given population is on a ratio of 4:1, respectively. A sample of 500 individuals was randomly sampled from this population and 450 individuals were found to use pills. Was this results consistent with expected ratios at 5% probability level?   (6 marks)

SECTION II (40 MARKS)

5. The following data set gives the results from patients receiving four different treatments for a certain disease. The patient were blocked according to their age.

Block/Treatment	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Block 1	8	12	21	16
Block 2	9	13	22	15
Block 3	7	10	18	14
Block 4	6	11	15	15

Perform analyse of variance and test if the four treatments are significantly different at 5% significant level.   (20 marks)

6. Using the following data, calculate the mean, mode, median, standard deviation, coefficient of variation and Pearson measure of skewness.   (20 marks)

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

7. (a) An IQ test was administered to 5 persons before and after they were trained. The results are given below:

Person	1	2	3	4	5
IQ before training	110	120	123	132	125
IQ after training	120	118	125	136	121

Determine if the training has brought change in IQ test at $\alpha = 0.01$.   (8 marks)

(b) Using the following data

(i) Fit a repression model   (8 marks)

(ii) Obtain a correlation coefficient   (4 marks)

x	1	2	3	4	5	6	7
y	7	10	16	24	30	45	50