

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

**SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN WILDLIFE AND ENTERPRISE MANAGEMENT**

**ENSC 261: STATISTICS FOR ENVIRONMENTAL SCIENCE**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 23/03/2021**

**11.30 A.M – 1.30 P.M**

**INSTRUCTIONS:**

**Answer ALL questions in section A and any two from section B**

**Do not write on the question paper**

**SECTION A (30 MARKS)**

1. The performance of a graduating student in various unit is given below.

Score (x)	40-49	50-59	60-69	70-79	80-89	90-99
frequency	5	8	15	10	5	2

- (a) Determine the absolute mean deviation distribution [6 marks]
  - (b) The standard deviation of the distribution. [4 marks]
  - (c) The standard score of any two mid values. [2 marks]
2. The population size and number of Covid 19 incidences in three towns in Kenya in January 2021 were as follows.

Category	Nairobi	Nakuru	Chuka
Incidences	850	160	25
Population	6,500,000	500,000	55,000

- (a) Determine the proportion and percentage of the incidence of the total in each of the 3 towns. [4 marks]
- (b) Determine the ratio of incidences between the 3 towns [2 marks]
- (c) Determine the rate of incidence per 10,000 people [2 marks]
- 3. List five features of a good average. [5 marks]
- 4. With a figure, outline features of the standard normal curve. [5 marks]

**SECTION B ( 40 MARKS)**

- 5. (a) Five projects are contesting for funding. The proposals are forwarded to eight reviewers who awarded the mark as shown below:

Plot 1	35	37	48	52	55	60	66	70
Plot 2	21	24	27	28	29	-	-	-
Plot 3	36	45	54	60	65	68	-	-
Plot 4	23	25	26	32	35	36	40	42
Plot 5	35	42	48	52	57	62	67	75

Perform an analysis of variance at 95% confidence level to determine whether there were significant differences in marks awarded to the different projects. [12 marks]

- (b) To test whether a certain diet was important for maintain a height body mass index, the weights of eight participants were taken before and ten weeks after the diet as shown below.

Before	61	50	69	63	60	62	80	75
After	59	50	70	61	60	60	81	73

By use Wilcoxon matched pairs signed rank test determine whether the diet was significant in affecting the body mass index of the participants. [8 marks]

6. (a) The weight of tomatoes harvested per plant for different watering regimes was observed and recorded as shown below.

Water (ml)	20	25	30	35	40	45	50	55	60	65	70
Weight (g)	100	120	140	160	180	200	220	240	260	280	300

Determine whether the correlation between the two variables was significant.

[12

marks]

- (b) Discuss the characteristics of ratio level of measurement. [8 marks]

7. (a) In a certain test 12 participants were given a painkiller, and then were required to place their hand in ice cold water until it became unbearable. The following day the test was repeated with a placebo. The time taken to remove there is given below.

Placebo	30	35	47	38	53	45	60	33	34	45	40	48
Drug (min)	10	15	20	28	22	16	24	14	20	10	16	27

By use of a paired t-test determine whether there is any significant difference between the drug and the placebo. [12 marks]

- (b) In a certain class the performance was as follows.

Score	38	35	75	57	40	48	52	56	61	65	72
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Determine the confidence interval of the mean at 95% confidence level. [8 marks]