



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR
THIRD YEAR FIRST SEMESTER**

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

COURSE CODE: AHP 3107-1

COURSE TITLE: APPLIED BIostatISTICS

DATE: 05/12/2023

TIME: 1100-1400 HRS

Instructions

- Answer **All** questions in **Section A** and **ANY TWO** in **Section B**
- Illustrate your answers with suitable diagrams and give appropriate examples wherever necessary

SECTION A: ANSWER ALL THE QUESTIONS

1. Outline the assumptions of the Whitney test (4 marks)
2. Discuss any three types of randomization (6 marks)
3. Discuss the three tests used in hypothesis testing (3 marks)
4. Briefly discuss the two types of statistical errors in biostatistics (4 marks)
5. Briefly discuss the characteristics of case study design (3)
6. Discuss factors that help achieve high levels of precision in experimental design (4)
7. Discuss any three types of regression (3marks)

8. SECTION B ANSWER ANY TWO QUESTIONS (Each 20 marks)

- i) Discuss the types of Chi-square (4marks)
- ii) Calculate the appropriate Chi-square of the data below of age of students and their performance in exam (16marks)

		Age of students		
Exam performance		young	Middle	old
	Pass	12	14	9
	Fail	8	6	11

Question 9 (20 marks)

- i) Discuss types of ANOVA (3 marks)
- ii) Discuss sources of Variations in ANOVA (3 marks)
- iii) The table below shows weights of different treatments goats in grams (g) recovered from feeding on similar foods Calculate the ANOVA for the data below (14 marks)

GOAT A	GOAT B	GOAT C	GOAT D
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23	27	17	30
21	23	15	24
21	29	14	27
19	33	14	19

The table below represents scores of 40 students

72	58	66	73	80	78	94	90
70	76	44	77	54	61	90	45
57	66	49	63	62	60	41	63
62	66	67	61	72	51	62	70
72	70	53	54	69	71	58	46

- Prepare frequency distribution table, Frequency cumulative table, relative frequency, Cumulative relative frequency, frequency histogram, and frequency polygon for the data set above (10 marks)
- Compute the descriptive statistics for the above data (10 marks)

Question 10 (20 marks)

- Discuss t-test (4 marks)
- Ellen Davis Jones (A-15) studied the effects of reminiscence therapy for older women with depression. She studied 15 women 60 years or older residing for 3 months or longer in an assisted living long-term care facility. For this study, depression was measured by the Geriatric Depression Scale (GDS). Higher scores indicate more severe depression symptoms. The participants received reminiscence therapy for long-term care, which uses family photographs,

scrapbooks, and personal memorabilia to stimulate memory and conversation among group members. Pre-treatment and post-treatment depression scores are given in the following table. Can we conclude, based on these data, that subjects who participate in reminiscence therapy experience, on average, a decline in GDS depression scores? Let $\alpha=0.01$ (16 marks)

Pre-GDS: 12 10 16 2 12 18 11 16 16 10 14 21 9 19 20

Post-GDS: 11 10 11 3 9 13 8 14 16 10 12 22 9 16 18

/END/

