MAASAI MARA UNIVERSITY

SUPPLEMENTARY UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER

SCHOOL OF NATURAL RESOURCES TOURISM AND HOSPITALITY

BACHELOR OF SCIENCE (ENVIRONMENTAL BIOLOGY AND HEALTH)

COURSE CODE: EBH 3122

COURSE TITLE: STATISTICS FOR BIOLOGICAL AND HEALTH SCIENCES

DATE: 30TH MARCH 2022 **TIME: 0830-1030 HRS**

INSTRUCTIONS TO CANDIDATES

ATTEMPT ALL QUESTIONS IN SECTION A AND ANY 3 IN SECTION B

Support your answers with relevant examples and illustrations and clearly show your calculations, where relevant.

This paper consists of 3 printed pages. Please turn o

SECTION A: ANSWER ALL QUESTIONS (30mks)

1. Describe the one- sample T- test (2mks)
2. List **three** applications of Chi- square (3mks)
3. Calculate the Rank Correlation between fasting blood glucose level and systolic blood pressure in 10 diabetics. (5% level of significance). (5mks)

s.no	1	2	3	4	5	6	7	8	9	10
Fasting B.S	90	92	98	112	120	121	126	132	143	145
Systolic B.P	136	140	142	130	148	135	150	170	145	165

Using the test statistic;

Spearman's rank coefficient $r_s = 1 - \frac{6\Sigma d^2}{n(n^2-1)}$

n= number of subjects

4. Which non- parametric tests are applied when we have to test an assumption about the population distribution with a random sample from the population? 3mks
5. (3mks).
6. Differentiate between theoretical distribution and observed sampling distribution (2mks).
7. Explain the **two** types of clinical trials (2mks).
8. List **five** commonly used experimental designs (5mks).
9. List **four** types of parametric tests (4mks).
10. Describe the **two** types of hypothesis assumed in research (2mks).

SECTION B: ANSWER ANY TWO QUESTIONS (40MKS)

11. In a mortality survey in a village, it is found that the proportion of sick persons is 40%. Assuming random sampling, generate the ways in which we will get such a sample and calculate the probability for a Binomial Distribution (20mks).
12. Discuss the process of hypothesis formulation and testing including errors committed in hypothesis testing (20mks).
13. Discuss applications of statistics in five areas of biological sciences and health (20mks).
14. A physician has a hypothesis that a certain disease requiring hospitalization is equally common among men and women. In a sample of 900 hospital cases, he finds 480 men and 420 women. Do these results support or contradict his hypothesis? (5% level of χ^2 with one d.f)

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