

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF MASTER OF EDUCATION

EDUC 803: STATISTICAL METHODS IN EDUCATION

STREAMS: MED

DAY/DATE: WEDNESDAY 21/7/2021

TIME: 3 HOURS

2.30 P.M. – 5.30 P.M.

INSTRUCTIONS:

- Answer question ONE and any other TWO
- Do not write ion the question paper

QUESTION ONE

- (a) Explain the following:
- Null and Alternative hypothesis
 - Parametric and non-parametric statistics
 - One tailed and two tailed tests
 - Type I error and type II error in hypothesis testing
 - Acceptance and resection regions in hypothesis testing. [10 marks]

- (b) The scores of mathematics and physics exam were recorded as follows

Mathematics	75	72	73	81	65	79	80	66	55	60
physics	87	63	71	65	66	49	52	61	70	58

Compute spearman’s rank order correlation coefficient and interpret your results

[10 marks]

- (c) A sample of 155 students were taken to test the hypothesis that the mean number of hours that students spend reading per month is 100 hours. If this sample mean was established as 120 hours with standard deviation of 5, test the null hypothesis at $\alpha = 0.05$ level of significance given that $|z| < 1.96$ [5 marks]

- (d) Describe the steps followed in hypothesis testing [5 marks]

QUESTION TWO

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- (a) Explain five statistical characteristics of a normal curve [10 marks]
(b) Discuss any two methods of presenting data in statistics [5 marks]

QUESTION THREE

- (a) The following data was collected from a control and experimental groups of a study

Control	3	8	7	6	5	4	8	9	6	4
Experimental	8	6	2	5	4	2	3	6	3	8

Test the hypothesis that there is no difference in means of experimental and control groups using t-test at $\alpha = 0.05$ and $t_{9,0.05} = 1.833$ [10 marks]

- (b) A coin was tossed 30 times and the outcomes were 12 heads and 18 tails. Establish if the coin was biased. Take $X_{cr}^2 = 3.84$ at $\alpha = 0.05$ significance level [10 marks]

QUESTION FOUR

- (a) Explain the rationale for using analysis of variance in data analysis [5 marks]
(b) Two random samples drawn from the normal population are

Sample I 20, 16, 26, 27, 23

Sample II 33, 41, 32, 29, 26

Test using variance ratio at 5 percent level of significance whether the two populations have the same variances

Take F -ration table value = 6.39 [10 marks]
