MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL MANAGEMENT AND CURRICULUM STUDIES

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

MASTER OF EDUCATION

ECC 802: EDUCATIONAL STATISTICS

DATE: 2/5/2019 **TIME: 2:00 – 4:00 PM**

INSTRUCTIONS:

Answer question ONE and any other TWO questions. All questions carry equal marks.

QUESTION ONE (20 MARKS)

a) Using relevant examples, define the following terms; (10 marks)

i) Kurtosis

ii) Data

iii) Skewness

iv) Statistics

v) Variable

b) Citing appropriate examples, distinguish between descriptive statistics and Inferential statistics. (6 marks)

c) Kunder-Richardson (K-R) 20 formula i.e KR20= $\frac{K}{(S2 - SUMS2)}/(S2)(K-1)$

Where; KR20 = Reliabilty coefficient of internal consistency

K = Number of items used to measure the concept

S2 = Variance of all scores

S2 = Variance of individual items

Using the KR formula, briefly explain what a high coefficient implies (4 marks)

QUESTION TWO (20 MARKS)

a) In an examination done by 25 candidates, the mean was 60 marks and the standard deviation 8. Assuming it was a nominal distribution:

i) Compute the proportion of candidates who scored between 52 and 76 marks (2 marks)

ii) Supposing 85% of the top candidates are to be selected, what is the minimum mark a candidate is expected to score so as to be selected? (2 marks)

iii) How many students got 72 marks and above? (2 marks)

b) The table shows the scores of students in an examination marked out of 50 marks

Marks	**No. of Students**
40 – 44	2
35 – 39	4
30 – 34	`7
25 – 29	10
20 – 24	6
15 – 19	5
10 – 14	2
5 – 9	3
0 – 4	1
N = 40	

Calculate

i) The mean mark (4 marks)

ii) The mode (1 mark)

iii) The median (1 mark)

c) State FOUR limitations of casual-comparative research and describe control procedures that can be used to minimize these limitations (8 marks)

QUESTION THREE (20 MARKS)

a) Give examples of studies in which it is appropriate to use the chi-square test and analysis of variance. In each case, give the reasons for your choice. (4 marks)

b) Discuss the essential assumptions that are recognized when using regression analysis. (4 marks)

c) Differentiate between simple and multiple regressions. (4 marks)

d) Construct a regression model for a study set out to investigate the influence of age, education and occupation on financial status of households. (8 marks)

QUESTION FOUR (20 MARKS)

The scores of students in Mathematics is as given below;

Form (1A) 23, 60, 60, 45, 33, 48, 59, 75, 60, 13, 68

(1B) 11,25, 37, 80, 76, 37, 55, 26, 90, 79, 25, 37

a) Calculate the standard deviation for each group, form 1A and form 1B (8 marks).

b) Calculate the standard deviation for the combined groups -form IA and 1B (6 marks)

c) Compute the t-test (6 marks)

QUESTION FIVE (20 MARKS)

a) Explain why it is important to conduct normal distribution tests before analyzing data (4 marks)

b) Assuming you have collected data on KCPE mean grades of primary schools in 4 counties. You wish to summarise the mean grades by county using a chart. Which is the most appropriate chart that can be used to perform the task?, justify your answer (4 marks)

c) Differentiate between a one sample t-test and an independent sample t-test (2 marks)

d) Interpret and explain the results of the hypothesis test contained in tables 2a and 2b (10 marks)

Table 2a

Group Statistics					
Scale	Gender	N	Mean	Std. Deviation	Std. Error Mean
Students motivation to learn physics	Male	44	4.0573	.43702	.06588
	Female	36	4.0189	.47439	.07907

Table 2b

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
ESMQ Pre-test mean scores	Equal variances assumed	.516	.475	.376	78	.708	.03838	.10207	-.16482	.24158
	Equal variances not assumed			.373	72.161	.710	.03838	.10292	-.16677	.24354