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UNIVERSITY EXAMINATIONS 2024/2025

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR POST GRADUATE DIPLOMA OF EDUCATION

EMG 4102: STATISTICS AND RESEARCH METHODS IN EDUCATION

DATE: JANUARY 2025 **TIME: 3 HOURS**

INSTRUCTIONS:
Answer Question ONE (Section A) and any other THREE Questions from section B.
Start each question on a fresh page
Use of scientific calculators is permitted.
Statistical tables have been provided.

SECTION A

QUESTION ONE - (24 MARKS)

a) Compare and contrast the strengths and weaknesses of qualitative and quantitative methods in conducting research in education. (6 Marks)

b) With examples explain, the difference between a theoretical and conceptual framework. (6 Marks).

c) Give three reasons why educational researchers carry out a thorough literature review? (3 Marks)

d) Discuss any four sampling approaches showing their strengths and weaknesses. (9 Marks)

SECTION B

QUESTION TWO (12 MARKS)

a) Differentiate between:

i. Independent and dependent variables

ii. Descriptive and inferential statistics

iii. Measures of central tendency and measures of dispersion. (3 Marks)

b) i) Given that the mean of a distribution is 49.5 and the standard deviation is 14.3, convert the following scores into standard scores: 73, 80 and 92. (6 Marks)

ii) If the three scores above represent the performance of 3 students, which student performed better than the rest? Use a sketch of the normal curve to illustrate**.** (3 Marks)

QUESTION THREE (12 MARKS)

The following are scores obtained from a group of 15-year-olds on reading and writing competence.

Reading	5	7	12	10	8	4	15	9
Writing	6	6	7	12	14	9	8	12

Use the scores to:

i) Compute the correlation coefficient.
ii) Interpret the correlation coefficient.
iii) Test the strength of the relationship. (12 Marks)

QUESTION FOUR (12 MARKS)

a) What constitutes an acceptable sample size? Explain your answer. (4 Marks)

b) Why are experiments rare in the study of human behaviour? (4 Marks)

c) Briefly discuss four experimental designs. (4 Marks)

QUESTION FIVE (12 MARKS)

Discuss **four** methods of data collection explaining their relevance to educational research.

(12 Marks)

Critical values for Coefficients of Correlation

Critical values of Pearson's ρ					
	Level of significance (α) for one tailed test				
df	0.05	0.025	0.01	0.005	0.0005
(n-2)	Level of significance (α) for two tailed test				
	0.1	0.05	0.025	0.01	0.001
1	0.988	0.997	1.000	1.000	1.000
2	0.900	0.950	0.980	0.990	0.999
3	0.805	0.878	0.934	0.959	0.991
4	0.729	0.811	0.882	0.917	0.974
5	0.669	0.755	0.833	0.875	0.951
6	0.622	0.707	0.789	0.834	0.925
7	0.582	0.666	0.750	0.798	0.898
8	0.549	0.632	0.716	0.765	0.872
9	0.521	0.602	0.685	0.735	0.847
10	0.497	0.576	0.658	0.708	0.823
11	0.476	0.553	0.634	0.684	0.801
12	0.458	0.532	0.612	0.661	0.780
13	0.441	0.514	0.592	0.641	0.760
14	0.426	0.497	0.574	0.623	0.742
15	0.412	0.482	0.558	0.606	0.725
16	0.400	0.468	0.543	0.590	0.708
17	0.389	0.456	0.529	0.575	0.693
18	0.378	0.444	0.516	0.561	0.679
19	0.369	0.433	0.503	0.549	0.665
20	0.360	0.423	0.492	0.537	0.652
25	0.323	0.381	0.445	0.487	0.597
30	0.296	0.349	0.409	0.449	0.554
35	0.275	0.325	0.381	0.418	0.519
40	0.257	0.304	0.358	0.393	0.490
45	0.243	0.288	0.338	0.372	0.465
50	0.231	0.273	0.322	0.354	0.442
60	0.211	0.250	0.295	0.325	0.408
70	0.195	0.232	0.274	0.302	0.380
80	0.183	0.217	0.257	0.283	0.357
90	0.173	0.205	0.242	0.267	0.338
100	0.164	0.195	0.230	0.254	0.321