KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2019/2020

CITY CAMPUS

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

SSC 905: QUANTITATIVE AND QUALITATIVE DATA ANALYSIS

DATE: MONDAY 25TH NOVEMBER 2019 TIME: 5.30 P.M. - 8.30 P.M.

INSTRUCTIONS:

1. There are **FIVE** questions
2. Question one is compulsory
3. Answer any other **TWO** other questions
4. Candidates may use electronic calculators but not mobile phones.

Questions One (Compulsory 20 Marks)

a) Explain the five main steps of hypothesis testing (4 marks)

b) Discuss, giving appropriate examples, the similarities between quantitative and qualitative data analysis (8 marks)

c) Twelve students were given an arithmetic test and the time in minutes to complete the test are as follows: 20,24,18,12,14,15,28,16, 25, 22,16 ,14. Using the provided data, compute the following:

i) Arithmetic mean (1 marks)
ii) Quadratic mean (1 marks)
iii) Variance (2 marks)
iv) Standard deviation (2 marks)
v) Coefficient of variability (2 marks)

Question Two

a) Discuss using illustrative diagrams the main characteristics of a normal distribution curve (6 marks).

b) Explain the types and implications of skewed data distributions (4 marks).

c) Discuss the implications of kurtosis in data distribution (4 marks).

d) The following data shows performance of three students selected from a class of Form Three students in Nyeri County.

Type of Course	Cadet 1	Cadet 2	Cadet 3	Mean	Standard Deviation
Diplomacy	35	22	20	30	4
Shooting skills	23	14	28	21	3
Mathematics	39	24	20	28	5

i. Determine whether Cadet 3 performed better in Diplomacy or Shooting skills

(2 marks)

ii. Find out the mean z-score for Cadet 1 in all the three subjects taken in the exams (2 marks)

iii. Determine the mean z-score for Cadet 2 in all papers taken (2 marks)

Question Three

A study was conducted to find out the type of relationship between randomly selected postgraduate students scores in Research Methods and Statistics at Mount Kenya University students during the 2017/2018 academic year. The results are as displayed in the table below.

Student	Research Methods(X)	Statistics (Y)
A	84	69
B	74	64
C	48	56
D	54	72
E	72	85
F	71	68
G	96	87
H	75	86
I	69	71
J	100	91
K	23	31
L	58	65
M	94	89
N	76	71
O	52	54
P	61	66
Q	77	78
R	98	97
S	83	84
T	77	71

a) Use systematic hypothesis testing process to test the null hypothesis that there is no significant relationship between Research methods and statistics among students at the university. Use α= .05 level of significance (15 marks)

b) Determine the coefficient of determination (5 marks)

Question Four (20 marks)

Kenyatta University Management wants to determine whether there is an association between academic rank of members of academic staff and their opinions concerning alignment of university programmes to competency-based curriculum. Interviewing a sample of 313 members of the academic staff constituting 104 Lecturers, 131 Senior Lecturers, and 78 Professors, the Chairman of the Reform Committee obtained the results shown in the following table.

Responses	Academic staff		
	Lecturers	Senior Lecturers	Professors
Against CBC	47	34	14
Not committed to CBC	41	49	29
In support of CBC	16	48	35

a) Analyze this table and test the null hypothesis that there is no difference of opinion concerning the curriculum change among the three categories of academic staff members at the university. Use a level of significance of $\propto = .05$. (15 marks).

b) Determine Cramer's V Statistics using results from section (5a) above (5 marks)

Question Five (20 marks)

a) Explain the techniques of narrative data Analysis (5 marks)

b) Discuss, using appropriate examples, the main steps in conducting a qualitative data analysis such as thematic Data Analysis (15 marks)

TABLE . Four

TABLE D The *t* distribution*

	Confidence interval percents (two-tailed)					
	80%	90%	95%	98%	99%	99.9%
	Significance level for two-tailed test					
	.20	.10	.05	.02	.01	.001
	Significance level for one-tailed test					
df	.10	.05	.025	.01	.005	.0005
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.924
4	1.533	2.132	2.776	3.747	4.604	8.610
5	1.476	2.015	2.571	3.365	4.032	6.869
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.408
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.474	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.581
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	1.980	2.358	2.617	3.373
∞	1.282	1.645	1.960	2.326	2.576	3.291

* To be significant the *t* obtained from the data must be equal to or larger than the value shown in the table.

SOURCE: Table III of Fisher and Yates (1963), *Statistical Tables for Biological, Agricultural and Medical Research*, published by Longman Group Ltd., London (previously published by Oliver & Boyd, Edinburgh), and by permission of the authors and publishers.

TABLE FIVE

Table 8: The percentage of points for the F-Distribution
Degrees of freedom (α = .05)

Degrees of freedom denominator (DFD)	Degrees of freedom numerator (DFN)							
		1	2	3	4	5	6	7
	1	161.4	199.5	215.7	224.6	230.2	234.0	236.8
	2	18.51	19.00	19.16	19.25	19.30	19.30	19.35
	3	10.13	9.55	9.28	9.12	9.01	8.94	8.89
	4	7.71	6.94	6.59	6.39	6.26	6.16	6.09
	5	6.61	5.79	5.41	5.19	5.05	4.95	4.88
	6	5.99	5.14	4.76	4.53	4.39	4.28	4.21
	7	5.59	4.74	4.35	4.12	3.97	3.87	3.79
	8	5.32	4.46	4.07	3.84	3.69	3.58	3.50
	9	5.12	4.26	3.86	3.63	3.48	3.37	3.29
	10	4.96	4.10	3.71	3.48	3.33	3.22	3.14
	11	4.84	3.98	3.59	3.36	3.20	3.09	3.01
	12	4.75	3.89	3.49	3.26	3.11	3.00	2.91
	13	4.67	3.81	3.41	3.18	3.03	2.92	2.83
	14	4.60	3.74	3.34	3.11	2.96	2.85	2.76
	15	4.54	3.68	3.29	3.06	2.90	2.79	2.71
	16	4.49	3.63	3.24	3.01	2.85	2.74	2.66
	17	4.45	3.59	3.20	2.96	2.81	2.70	2.61
	18	4.41	3.55	3.16	2.93	2.77	2.66	2.58
	19	4.38	3.52	3.13	2.90	2.74	2.63	2.54
	20	4.35	3.49	3.10	2.87	2.71	2.60	2.51
	21	4.32	3.47	3.07	2.84	2.68	2.57	2.49
	22	4.30	3.44	3.05	2.82	2.66	2.55	2.46
	23	4.28	3.42	3.03	2.80	2.64	2.53	2.44
	24	4.26	3.40	3.01	2.78	2.62	2.51	2.42
	25	4.24	3.39	2.99	2.76	2.60	2.49	2.40
	26	4.23	3.37	2.98	2.74	2.59	2.47	2.39
	27	4.21	3.35	2.96	2.73	2.57	2.46	2.37
	28	4.20	3.34	2.95	2.71	2.56	2.45	2.36
	29	4.18	3.33	2.93	2.70	2.55	2.43	2.35
	30	4.17	3.32	2.92	2.69	2.53	2.42	2.33
	40	4.08	3.23	2.84	2.61	2.45	2.34	2.25
	60	4.00	3.15	2.76	2.53	2.37	2.25	2.17
	120	3.92	3.07	2.68	2.45	2.29	2.17	2.09
		3.84	3.00	2.60	2.37	2.21	2.10	2.01

****