

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING

MAIN EXAMINATION PAPER MAY 2018

B.SC., B.A., BASS & B.ED

TITLE OF PAPER: STATISTICAL MEASURES AND ANALYSIS

COURSE NUMBER: GEP 224

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

1. ANSWER THREE (3) QUESTIONS
2. QUESTION 1 IS COMPULSORY
3. CHOOSE TWO (2) QUESTIONS FROM SECTION B
4. WHERE APPROPRIATE ILLUSTRATE YOUR ANSWERS WITH EXAMPLES
5. ALL WORKING AND/OR CALCULATIONS MUST BE SHOWN
6. YOU WILL BE PROVIDED WITH GRAPH PAPERS AND TABLES FOR CRITICAL VALUES AND SIGNIFICANT LEVELS.

ALLOCATION OF MARKS: QUESTION ONE (1) CARRIES 40 MARKS
WHILE THE REST CARRY 30 MARKS EACH

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION IS GRANTED BY
THE INVIGILATOR

MAIN EXAMINATION MAY 2018

SECTION A: COMPULSORY

QUESTION 1

A veterinary officer in the Ministry of Agriculture is interested in determining the association between the number of cattle a farmer has and the holding size of the farm. To answer this question, the officer collected the following data shown in table 1.

TABLE 1 The distribution of cattle ownership and holding size on title Deed Land in Swaziland

No. of Cattle	Holding Size (hectares)
80	121
29	68
61	49
92	154
01	62
42	62
88	140
23	30
74	88
67	67
88	39
19	12
01	07
76	28
87	134

- Draw a scatter plot of the data. (20 marks)
- Assuming that the data are linearly related, derive the least squares regression line. (5 marks)
- Based on this data, what would be the holding size of a farmer with 90 beasts? (3 marks)
- Compute the Pearson Correlation Coefficient of the two variables using any two formulae. (12 marks)

(40 Marks)

GEP 224: STATISTICAL MEASURES & ANALYSIS**MAIN EXAMINATION MAY 2018****SECTION B: ANSWER ANY TWO QUESTIONS****QUESTION 2**

- (a) Discuss the following sampling techniques:
- i. Simple random sampling (5 marks)
 - ii. Stratified sampling (5 marks)
 - iii. Systematic sampling (5 marks)
 - iv. Cluster sampling (5 marks)
- (b) Explain the following terms:
- i. Sample (2 marks)
 - ii. Sample size (2 marks)
 - iii. Sampling frame (3 marks)
 - iv. Population (3 marks)
- (30 Marks)**

QUESTION 3

Discuss the advantages and disadvantages of using a mail questionnaire as a method of data collection in developing countries

(30 Marks)

QUESTION 4

Table 2 shows hypothetical ages of 10 domestic workers in two different townships of Manzini town. Using the t-test for paired samples, test the hypothesis that there is no difference in the ages of the domestic workers at 0.01 significance level.

(30 Marks)

QUESTION 5

- a) Outline the functions of statistical techniques in geography (10 marks)
 - b) Compare and contrast the common characteristics of parametric and non-parametric tests. (20 marks)
- (30 Marks)**

GEP 224: STATISTICAL MEASURES & ANALYSIS**MAIN EXAMINATION MAY 2018****TABLE 2 Hypothetical ages of domestic workers in Manzini town**

Fairview	Ngwane Park
45	34
60	43
59	50
48	47
45	43
40	24
62	36
36	18
54	25
57	39

t Table

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
Z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										