DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

RE-SIT EXAMINATION PAPER JULY 2017

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

TITLE OF PAPER: STATISTICAL GEOGRAPHY/STATISTICAL MEASURES AND ANALYSIS

COURSE NUMBER: GEP 223/224

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 GRPAH 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

GEP 223/224: STATISTICAL GEOGRAPHY/STATISTICAL MEASURES & ANALYSIS

JULY 2017

SECTION A: COMPULSORY

QUESTION 1

Table 1 shows the following data which is the amount of time (in minutes) it took a certain individual to drive to work on five days, selected at random, along four different routes.

Table 1 Travel time taken in 4 routes

Day	Route 1	Route 2	Route 3	Route 4
1	25	27	28	28
2	26	27	29	29
3	25	28	33	27
4	25	26	30	30
5	28	26	30	27

Using this data, perform an Analysis of Variance among the four routes at 0.05 level of significance to test whether the differences in the sample means are significant or not.

(40 Marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

a) Identify three (3) geographical problems where participant observation would be a suitable technique for data collection. (18 marks)

b) Discuss the advantages of using secondary data in research (12 marks)

(30 Marks)

QUESTION 3

The Swaziland Government has commissioned you to carry out a study of 500 industries in the industrial towns of Ngwenya and Matsapha and then evaluate their contribution to the national economic development of the country. Of the industries, 250 are small scale, 150 are medium scale and 100 are large scale.

a) Demonstrate clearly how you would choose a representative sample for this study. (15 marks)

b) Indicate the type of information you will need for this study. (08 marks)

c) Identify possible sources of relevant information for this study. (07 marks)

30 Marks)

QUESTION 4

Table 2 shows hypothetical scores for a sample of students from three (3) different high schools in the Shiselweni district. The Null (H_0) hypothesis states that: There is no difference in the scores obtained by students from the three (3) high schools. The alternative hypothesis (H_1) states that: there is actually a difference in the scores obtained by the three high schools. Apply the Kruskal Wallis test to establish whether the H_0 can be rejected at 0.01 significance level in favour of H1.

Table 2 Hypothetical scores for sampled students (in minutes)

Evelyn Baring High	Franson Christian High	Ngwane Central High
98	81	84
87	76	89
99	94	91
88	77	85
79	84	88
86	90	89

(30 Marks)

QUESTION 5

a) Outline the functions of statistical techniques in human geography (10 marks)

b) Explain the main steps involved in the scientific approach to analysing geographical problems. (12 marks)

c) Indicate instances whwere you can use the following statistics

i. Students't-test (02 marks)
ii. Regressional analysis (02 marks)
iii. Pearson Correlation Co-efficient (02 marks)
iv. Chi-square test (02 marks)

(30 Marks)

C7b Critical Values of F at the 0.05 Significance Level

Degrees of freedom for between samples variance estimate

Degrees of freedom for within samples variance estimate	1	2	3	4	5	6	7	8	9
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88

C5 Critical Values of Chi Square

Degrees of freedom	Significance level 0.1	0.05	0.01	0.005	0.001
1	2.71	3.84	6.64	7.88	10.83
2	4.60	5.99	9.21	10.60	13.82
3	6.25	7.82	11.34	12.84	16.27
4	7.78	9.49	13.28	14.86	18.46
5	9.24	11.07	15.09	16.75	20.52
6	10.64	12.59	16.81	18.55	22.46
7	12.02	14.07	18.48	20.28	24.32
8	13.36	15.51	20.09	21.96	26.12
9	14.68	16.92	21.67	23.59	27.88
10	15.99	18.31	23.21	25.19	29.59
11	17.28	19.68	24.72	26.76	31.26
12	18.55	21.03	26.22	28.30	32.91
13	19.81	22.36	27.69	30.82	34.53
14	21.06	23.68	29.14	31.32	36.12
15	22.31	25.00	30.58	32.80	37.70
16	23.54	26.30	32.00	34.27	39.29
17	24.77	27.59	33.41	35.72	40.75
18	25.99	28.87	34.80	37.16	42.31
19	27.20	30.14	36.19	38.58	43.82
20	28.41	31.41	37.57	40.00	45.32
21	29.62	32.67	38.93	41.40	46.80
22	30.81	33.92	40.29	42.80	48.27
23	32.01	35.17	41.64	44.18	49.73
24	33.20	36.42	42.98	45.56	51.18
25	34.38	37.65	44.31	46.93	52.62
26	35.56	35.88	45.64	48.29	54.05
27	36.74	40.11	46.96	49.65	55.48
28	37.92	41.34	48.28	50.99	56.89
29	39.09	42.56	49.59	52.34	58.30
30	40.26	43.77	50.89	53.67	59.70
40	51.81	55.76	63.69	66.77	73.40
50	63.17	67.51	76.15	79.49	86.66
60	74.40	79.08	88.38	91.95	99.61
70	85.53	90.53	100.43	104.22	112.32
80	96.58	101.88	112.33	116.32	124.84
90	107.57	113.15	124.12	128.30	137.21
100	118.50	124.34	135.81	140.17	149.45

Reject H_0 if calculated value of chi square is **greater than** the critical value at the chosen significance level.