UNIVERSITY OF SWAZILAND

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

SUPPLEMENTARY EXAMINATION PAPER – JULY, 2009

B.A., B.A.S.S., B. Ed., B. Sc.

TITLE OF PAPER: STATISTICAL GEOGRAPHY

COURSE NUMBER: GEP 223

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 BY EXAMPLES.
5. ALL WORKING AND/OR CALCULATIONS MUST BE CLEARLY SHOWN.
6. YOU WILL BE PROVIDED WITH GRAPH PAPERS AND TABLES FOR CRITICAL VALUES AND SIGNIFICANCE LEVELS.

MARK ALLOCATION: QUESTION ONE (1) CARRIES FORTY (40) MARKS AND THE OTHER QUESTIONS ARE THIRTY (30) MARKS EACH.

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GEP 223: STATISTICAL GEOGRAPHY – JULY, 2009

QUESTION 1

Using the data in Table 1 do the following:

(a) Draw a scatter plot of the data. (5 marks)
(b) Derive the least squares regression line. (15marks)
(c) Compute the Pearson's Correlation Coefficient (r). (15 marks)
(d) Interpret the value of r obtained in (c) above. (5 marks)

[40 marks]

Table1: Latitude and Temperature Range in ^{0}C for some stations in north and south of the equator

Station No.	Latitude (x)	Temperature Range (y)
1	32S	1.7
2	6S	3.3
3	21N	4.4
4	30S	7.2
5	10N	2.2
6	1S	0.2
7	19N	5.6
8	25N	17.2
9	37N	13.9
10	33N	6.7
11	34S	10.6
12	42N	25
13	39N	11.1
14	34S	8.3
15	56N	16.7
16	35S	11.7
17	78N	24.4
18	78S	22.2
19	30N	15
20	24S	6.7

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

Data presented in table 2 shows hypothetical sizes of chiefdoms (A to E) and the number of homesteads with above 70% income generation from livestock. Use a chi-square test to establish whether or not the observed distribution in this data set is a result of random variations.

[30 marks]

Table 2: Size of chiefdoms and number of households that derive more than 70% income from livestock.

Chiefdoms	Size of chiefdoms (km^2)	No. of homesteads with above 70% income from livestock
A	36	18
B	45	14
C	59	24
D	40	6
E	37	20

Source: Hypothetical

QUESTION 3

A consultant commissioned to study industrial investments in Swaziland selected only the large scale industries located in Matsapha industrial complex.

(a) Discuss whether this is a representative sample of the industries in Swaziland. (10 marks)
(b) If you were employed to undertake this study:
(i) Discuss how you will do the study. (8 marks)
(ii) Indicate the sampling technique you would use. (2 marks)
(iii) Explain how you will apply the selected sampling technique. (10 marks)

[30 marks]

QUESTION 4

Table 3 indicates some hypothetical figures on water holding capacity for two sites (A and B) in a forest. The null hypothesis (H_0) is that there is no real difference in the water holding capacity between the two sites. The alternative hypothesis (H_1) states that site A actually has a higher water holding capacity than site B. The significance level is set at 0.05. Apply a student's t-test for independent samples to determine whether you should reject the H_0 in favour of the H_1.

[30 marks]

Table 3: Water holding capacity (in mbar)

Samples from site A (variable x)	Samples from site B (variable y)
82	46
68	46
52	40
95	58
91	53
74	25
81	54
78	70
74	41
83	59
62	72

Source: Hypothetical

QUESTION 5

Data provided in Table 4 below shows the number of vehicles which brought agricultural produce to Manzini main market.

(a) (i) Group the data into four (4) classes. (2 marks)
(ii) Calculate the mean using the grouped data. (4marks).
(iii) Comment on the value of the mean obtained in (ii) above. (4 marks)

(b) Explain why the mean for grouped data is normally different from that obtained from individual data. (10 marks)

(c) Discuss why it is necessary to know how to calculate means for grouped data. (10 marks)

[30 marks]

Table 4: Number of vehicles which brought agricultural produce to Manzini between July 2007 and June 2008.

Month	Number of vehicles
July	645
August	124
September	535
October	535
November	831
December	803
January	558
February	411
March	769
April	1 103
May	934
June	730

Source: Hypothetical