UNIVERSITY OF SWAZILAND

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND

PLANNING

FINAL EXAMINATION PAPER – MAY, 2011

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.

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR

GEP 223: STATISTICAL GEOGRAPHY – MAY, 2011

SECTION A: COMPULSORY QUESTION

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: The distribution of maize yields and farm sizes in sampled households

Household No.	Maize yields (bags)	Farm sizes (ha)
1	80	121
2	29	68
3	61	49
4	92	154
5	01	62
6	42	62
7	88	140
8	23	30
9	74	88
10	67	67
11	88	39
12	19	12
13	01	07
14	76	28
15	87	134
16	16	20
17	48	90
18	10	06
19	12	19
20	10	51
21	71	134
22	04	12
23	62	120
24	80	66
25	05	19
26	18	42
27	00	31
28	06	31
29	28	77
30	58	49

Source: Hypothetical

SECTION B: ANSWER ANY TWO QUESTIONS

Question 2
Figure 1 shows the distribution of sampled Tinkhundla centres in Swaziland.
    (a) Calculate the Nearest Neighbour Index for the Tinkhundla centres.

(20 marks)
    (b) Explain the situations under which the Nearest Neighbour Index statistic can be used.

(10 marks)
[30 marks]

Question 3
A consultant commissioned to study industrial investments in Swaziland selected only the large scale industries located in Matsapha industrial area.
    (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.   State 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 2 indicates marks obtained by students from two faculties (A and B) in the final examination. The null hypothesis (H_0) is that there is no significant difference in the marks obtained by students between the two faculties in the final examination. The alternative hypothesis (H_1) states that students from faculty A actually have higher marks than those from faculty B. The significance level is set at 0.05. Apply the 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 2: Marks obtained by students in faculties A and B

Faculty A (variable x)	Faculty B (variable y)
80	50
68	46
52	81
40	58
76	53
74	25
81	54
78	70
74	41
35	59
62	72

Source: Hypothetical

Question 5

Data provided in Table 3 show the amount of rainfall received in a certain region.

(a)

    i.   Group the data into four (4) classes.

                        (2 marks)

    ii.   Calculate the mean using the grouped data.

                        (4 marks)

    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.
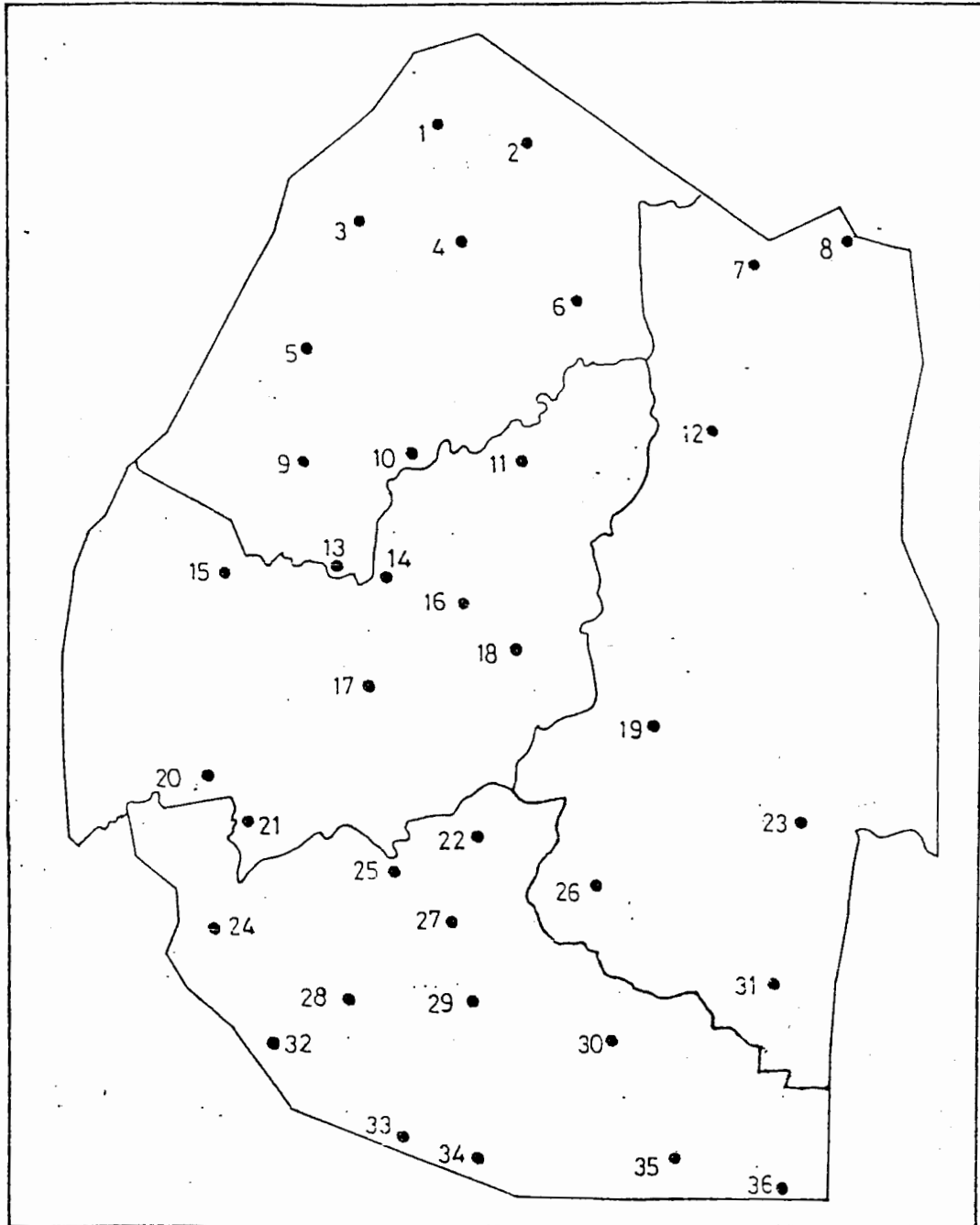
                        (10 marks)

                        [30 marks]

Table 3: Amount of rainfall received in a certain region from July 2007 - June 2008

Month	Rainfall (mm)
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

FIGURE 1

SAMPLED TINKUNDLA CENTRES IN SWAZILAND

Source: Drawing no 3891
Public Works Department   scale   1 : 500 000