

UNIVERSITY OF SWAZILAND

**DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING**

SUPPLEMENTARY EXAMINATION PAPER – JULY, 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 – JULY, 2011**SECTION A: COMPULSORY QUESTION****Question 1**

Table 1 shows maize yields from different farm sizes of some households in Mankayane area.

- (a) Calculate the Spearman's Correlation coefficient between maize yields and size of the farms. (20 marks)
- (b) Plot a scatter-gram and a regression line of the distribution of households in relation to their farm sizes and maize yields obtained. (10 marks)
- (c) Test the correlation coefficient at 0.05 significance level. (10 marks)
- [40 Marks]**

SECTION B: ANSWER ANY TWO QUESTIONS**Question 2**

- (a) Explain the main steps involved in the scientific approach in analyzing geographical problems. (14 marks)
- (b) Outline the functions of statistical techniques. (10 marks)
- (c) Indicate situations where the following statistical tests can be used.
- (i) Standard deviation. (2 marks)
- (ii) The student t-test. (2 marks)
- (iii) The Chi-Square test. (2 marks)
- [30 Marks]**

Question 3

Using data matrix (Table 2):

- (a) Calculate the standard deviation of the percentage of working males in social classes 1 and II for the first twenty (20) towns. (10 marks)
- (b) Calculate the skewness of variable E (Children in care of local authority as a percentage of all children under 18). (15 marks)
- (c) Explain the meaning of the skewness measure obtained in (b) above. (5 marks)
- [30 Marks]**

Question 4

Data presented in Table 3 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]

Question 5

Using data provided on Table 4:

(a) Plot a line graph showing the production of tea from 1951 to 1985.

(5 marks)

(b) Calculate five (5) year running means for tea production.

(10 marks)

(c) Using the same graph in (a) above, plot another line graph using the 5 year running means calculated in (b) above.

(5 marks)

(d) Compare the two line graphs plotted in (a) and (c) above.

(10 marks)

[30 marks]

Table 1: Distribution of maize yields and farm sizes of some households in Mankayane

H/H No.	Maize yields in bags	Farm size in (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

Source: Hypothetical

Table 2: Data Matrix

INDIVIDUALS	VARIABLES					
	A	B	C	D	E	F
1. Basildon	20.38	8.3	***	***	***	1.06
2. Birkenhead	12.70	6.9	5.5	8.14	1.96	0.68
3. Birmingham	12.70	7.8	10.7	2.34	0.00	0.64
4. Blackpool	19.56	11.9	5.5	3.96	0.00	0.45
5. Bolton	14.14	7.5	8.0	3.12	0.00	0.53
6. Bournemouth	23.85	14.1	10.0	2.76	3.62	0.97
7. Bradford	13.67	8.9	11.9	6.78	0.00	0.41
8. Brighton	20.33	11.4	9.9	3.69	0.00	0.61
9. Bristol	14.13	7.9	10.0	10.60	28.40	0.99
10. Cardiff	13.36	9.9	6.8	5.57	37.73	0.85
11. Coventry	9.46	6.4	6.5	3.09	4.41	0.74
12. Derby	13.71	5.1	7.1	1.19	0.00	0.59
13. Dudley	10.24	7.4	4.3	3.49	0.00	0.72
14. Gateshead	12.78	6.0	10.1	3.56	0.00	0.51
15. Huddersfield	13.95	10.1	7.2	1.58	0.00	0.54
16. Hull	12.20	7.2	6.6	2.20	47.59	0.29
17. Ipswich	13.38	7.6	6.0	4.20	67.76	0.59
18. Leeds	13.65	9.3	9.1	2.94	5.88	0.45
19. Leicester	13.72	8.8	9.2	1.10	0.00	0.61
20. Liverpool	14.06	7.5	8.1	1.10	26.94	0.45
21. London	12.97	14.7	9.2	5.15	10.17	0.92
22. Luton	9.42	6.9	4.3	1.87	18.60	0.74
23. Manchester	14.05	6.9	13.0	3.05	16.06	0.41
24. Newcastle	15.75	7.7	14.4	3.46	0.00	0.34
25. Newport	11.85	7.7	6.2	3.83	8.11	0.66

Source: Ebdon, 1977, P. 191 Appendix E

Table 3: 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

Table 4: Production of major crops from 1951 – 1985

Year	Sisal Fibre	Cotton Lint	Tea
1951	147 572	9 045	1 067
1952	164 849	8 639	1 118
1953	171 557	14 127	1 290
1954	181 111	9 147	1 626
1955	179 302	18 599	2 032
1956	188 733	21 851	2 439
1957	187 920	23 985	2 845
1958	199 811	30 693	2 845
1959	208 653	31 201	3 658
1960	208 247	35 978	3 759
1961	201 234	34 250	4 472
1962	217 434	30 388	4 269
1963	217 712	38 925	5 019
1964	233 540	47 646	4 812
1965	217 588	53 206	5 682
1966	225 080	67 034	6 800
1967	220 093	78 814	7 158
1968	196 892	70 830	7 923
1969	209 303	51 548	8 777
1970	202 180	69 403	8 492
1971	184 104	76 430	10 457
1972	156 849	63 351	12 706
1973	155 407	77 001	12 843
1974	143 442	65 148	12 973
1975	124 000	71 363	13 733
1976	123 698	42 410	14 075
1977	105 018	66 934	13 701
1978	91 873	50 435	17 385
1979	81 384	56 154	17 899
1980	85 978	60 477	17 088
1981	73 753	58 644	15 809
1982	60 635	44 512	16 425
1983	46 187	42 901	15 470
1984	38 255	41 808	16 455
1985	32 247	40 036	16 827

Source: Hypothetical