

UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING

SUPPLEMENTARY EXAMINATION PAPER – JULY, 2012

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, 2012

SECTION A: COMPULSORY QUESTION

Question 1

Table 1 shows maize yields from different farm sizes of some households in Siphofaneni 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 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) Using examples, explain how the following types of data differ from each other.
 - i. Individual and grouped data. (3 marks)
 - ii. Discrete and continuous data. (3 marks)
 - iii. Primary and secondary data. (3 marks)
 - iv. Nominal and ordinal data. (3 marks)
 - v. Interval and ratio data. (3 marks)
 - (b) Identify the main ways of obtaining primary data and discuss their strengths and limitations. (15 marks)
- (30 Marks)**

QUESTION 3

Using Data Matrix (Table 2):

- (a) Calculate the standard deviation of Variable B. (10 marks)
 - (b) Calculate the skewness of Variable C. (15 marks)
 - (c) Explain the meaning of the skewness measure obtained in (b) above. (5 marks)
- [30 Marks]**

QUESTION 4

Using data provided on Table 3:

- (a) Plot the line graph showing the production of tea from 1971 to 2005. (5 marks)
- (b) Calculate the five 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. (10 marks)
- (d) Comment on the graph plotted in (c) above. (5 marks)

[30 Marks]

QUESTION 5

An equal number of three butterfly species A, B, and C were introduced into a forest to breed. The H_0 was that all butterfly species will yield an equal proportion of butterflies. The H_1 was that the three different butterfly species will actually yield different numbers of butterflies. During field work, a sample of 2, 512 butterflies were caught randomly. Among these, 1123 were species A, 788 species B and 601 species C. Use the Chi-Square Test to establish whether the number of the different butterfly species caught is compatible with the H_0 .

[30 Marks]

Table 1: The distribution of maize yields and farm sizes of some households in Siphofaneni

H/H No.	Maize yields in bags	Farm size in (ha)
1	38	14
2	22	01
3	63	06
4	94	18
5	05	10
6	46	08
7	87	07
8	28	02
9	79	03
10	60	09
11	81	12
12	12	11
13	03	16
14	74	15
15	85	20
16	16	13
17	47	24
18	18	22
19	19	26
20	18	04
21	71	30
22	02	13
23	63	23
24	84	29
25	08	05

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: Production of major crops from 1971 – 2005

Year	Sisal Fibre	Cotton Lint	Tea
1971	147 572	9 045	1 067
1972	164 849	8 639	1 118
1973	171 557	14 127	1 290
1974	181 111	9 147	1 626
1975	179 302	18 599	2 032
1976	188 733	21 851	2 439
1977	187 920	23 985	2 845
1978	199 811	30 693	2 845
1979	208 653	31 201	3 658
1980	208 247	35 978	3 759
1981	201 234	34 250	4 472
1982	217 434	30 388	4 269
1983	217 712	38 925	5 019
1984	233 540	47 646	4 812
1985	217 588	53 206	5 682
1986	225 080	67 034	6 800
1987	220 093	78 814	7 158
1988	196 892	70 830	7 923
1989	209 303	51 548	8 777
1990	202 180	69 403	8 492
1991	184 104	76 430	10 457
1992	156 849	63 351	12 706
1993	155 407	77 001	12 843
1994	143 442	65 148	12 973
1995	124 000	71 363	13 733
1996	123 698	42 410	14 075
1997	105 018	66 934	13 701
1998	91 873	50 435	17 385
1999	81 384	56 154	17 899
2000	85 978	60 477	17 088
2001	73 753	58 644	15 809
2002	60 635	44 512	16 425
2003	46 187	42 901	15 470
2004	38 255	41 808	16 455
2005	32 247	40 036	16 827

Source: Hypothetical