UNIVERSITY OF COLOMBO – SRI LANKA

FACULTY OF ARTS

SPECIAL DEGREE EXAMINATION IN ARTS (GEOGRAPHY) – PART I

FIRST SEMESTER FINAL EXAMINATION – 2017

GYG 2129 – Locational Analysis

Two hours

Answer **three (03)** questions selecting at least **one** from each part.
The use of a calculator is allowed.
One graph paper will be provided.

Part I

01. i). Explain briefly the reasons for the agreement or disagreement on the following concepts and ideas using appropriate diagrams.

a) Absolute location is a form of relative location.

(03 Marks)

b) Agglomeration classification method represented the reciprocal of the logical sub division classification method.

(03 Marks)

c) Non-spatial data has no specific location in space. It can have a geographic view when linked to relevant spatial data.

(04 Marks)

ii). Select the most relevant words from the brackets for following words considering their relationships.

a) Nominal data (Water quality data of Nitrate concentration, Rainfall data, Bank account numbers).

b) Observation units (Variables, Dichotomous data, Central tendency measurements)

c) Nearest neighbor classification (Toblor's second law, Pythagoras theorem, Thermo dynamic theories)

d) Equal number of observation method (Quartiles, Percentiles, Percentages)

e) Elementary linkage table (Coefficient of localization, Chi squire classification, Nearest neighbor classification)

f) Chi squire classification (Dichotomous data, Ratio data, Qualitative data)

(03 Marks)

iii).Using the provided data in Table-1 calculate Location Quotients (LQ) for employments in each industry in Lismore area of the state of New South Wales (NSW) and interpret your results.

Table-1 : Employments in each industry in Lismore and the state of New South Wales for the financial year 2011/12

Industry	Employments		Location quotient for Lismore
	Lismore area in %	State of NSW %	
Construction	6.7	8.6	
Education and training	10.6	7.5	
Financial and insurance services	2.1	1.8	
Information media and telecommunication	2.1	0.9	
Mining	0.2	2.9	

(03 Marks)

iv). Briefly discuss the difference between grouping techniques and classification methods using appropriate examples.

(04 Marks)

Part II

02. "Everything is related to everything else, but near things are more related than distant things". –Waldo Tobler

Discuss the theoretical and practical validity of this statement using examples.

(20 Marks)

03."Locational analysis can be identified as an important approach to gain broad understanding of spatial concepts and representations in a critical spatial thinking". Examine this idea providing appropriate examples.

(20 Marks)

Part III

04.Table 2 shows the results of soil texture analysis of 15 selected samples under five soil texture categories namely fine sand, medium sand, coarse sand, silt and clay. Table 3 shows Mean ($\overline{X}$) and Standard Deviations (Sd) of the soil weights of the above categories. Answer the following questions using the provided data.

i). Compute the data using the information provided in Table 2 and Table 3.

(06 Marks)

ii). Suggest the most suitable classification method to classify the observation units in Table 2, using the computed data and give reasons for your selection.

(02 Marks)

iii).Classify the observation units using computed data in 4.i and the selected classification method in 4.ii.

(07 Marks)

iv). Prepare a summary table for your classification and discuss the important of classification to understand the differences of soil textures in a selected area.

.(05 Marks)

Table 2: Weights (milligrams) of soils under the texture categories of fine sand, medium sand, coarse sand, silt and clay.

Sample number	Fine sand	Medium sand	Coarse sand	Silt	Clay
1	$\overline{X}$+Sd	2$\overline{X}$+3Sd	$\overline{X}$+2 Sd	$\overline{X}$-2Sd	$\overline{X}$+ Sd
2	$\overline{X}$+4Sd	$\overline{X}$-Sd	$\overline{X}$-3Sd	$\overline{X}$-Sd	$\overline{X}$+3Sd
3	$\overline{X}$-4Sd	$\overline{X}$-3Sd	$\overline{X}$	$\overline{X}$+3sd	$\overline{X}$+ Sd
4	$\overline{X}$+2Sd	$\overline{X}$+3Sd	$\overline{X}$+4Sd	$\overline{X}$-2Sd	$\overline{X}$+ Sd
5	$\overline{X}$-2Sd	$\overline{X}$+2Sd	$\overline{X}$	$\overline{X}$+Sd	$\overline{X}$-Sd
6	$\overline{X}$+Sd	2$\overline{X}$+2Sd	$\overline{X}$+5Sd	3$\overline{X}$+4Sd	$\overline{X}$+Sd
7	$\overline{X}$+2Sd	$\overline{X}$-4Sd	$\overline{X}$-3Sd	$\overline{X}$-4Sd	$\overline{X}$+2Sd
8	$\overline{X}$	$\overline{X}$+Sd	Sd	$\overline{X}$-Sd	$\overline{X}$+2Sd
9	3$\overline{X}$+3Sd	2$\overline{X}$-Sd	$\overline{X}$+6Sd	$\overline{X}$+4Sd	$\overline{X}$+Sd
10	$\overline{X}$+Sd	$\overline{X}$+4Sd	2$\overline{X}$+4Sd	$\overline{X}$+2Sd	$\overline{X}$+4Sd
11	3$\overline{X}$+3Sd	$\overline{X}$-Sd	2$\overline{X}$+6Sd	$\overline{X}$	$\overline{X}$+Sd
12	2$\overline{X}$	$\overline{X}$+Sd	$\overline{X}$-Sd	$\overline{X}$+Sd	Nill
13	$\overline{X}$+2Sd	$\overline{X}$	Sd	$\overline{X}$+Sd	$\overline{X}$+Sd
14	$\overline{X}$+3Sd	2$\overline{X}$	$\overline{X}$-Sd	$\overline{X}$+2Sd	$\overline{X}$+5Sd
15	$\overline{X}$+Sd	$\overline{X}$	$\overline{X}$+Sd	$\overline{X}$+Sd	Nill

Table 3 : Mean ($\overline{X}$) and Standard Deviations (Sd) of soil texture categories

Sample number	$\overline{X}$ of Sand	Sd of Sand	$\overline{X}$ of Silt	Sd of Silt	$\overline{X}$ of Clay	Sd of Clay
1	30.00	10.50	50.20	10.30	18.10	19.30
2	50.80	7.10	44.30	4.30	21.00	12.20
3	12.90	2.60	80.50	40.60	17.20	10.00
4	25.70	12.20	48.80	11.20	18.50	18.20
5	70.80	21.40	15.40	14.60	25.80	18.20
6	1.40	2.00	20.30	35.40	14.40	11.50
7	2.50	0.50	380.00	43.30	17.80	10.20
8	1.50	3.00	507.50	307.20	28.70	6.00
9	8.00	2.00	51.40	12.85	52.00	31.20
10	10.00	2.00	60.80	16.20	40.40	14.60
11	20.00	2.00	53.60	52.40	30.80	29.60
12	61.40	38.20	2.10	2.30	5.30	5.90
13	52.20	44.40	4.00	4.20	1.40	2.80
14	48.50	12.30	13.20	7.10	1.50	0.50
15	56.70	34.50	5.60	5.30	2.50	4.40

05. Table 4 shows mangrove species types and concentration of water salinity (ppt) of 10 samples collected from a lagoon.

i). Classify the samples into two groups using the most suitable classification method.

(12 Marks)

ii). Prepare a summary table for your classification and examine the variation among groups.

(04 Marks)

iii). Explain the methods that you can use to interpret and present the spatial variation of mangrove species and concentration of salinity in water more meaningfully.

(04 Marks)

Table 4: Number of mangrove species and concentration of salinity (ppt) in water

Sample number	Salinity concentration of water (ppt)					Number of mangrove species types					
	1-6	7-12	13-18	19-24	25-30	1-3	4-6	7-9	10-12	13-15	16-18
1	No	No	No	No	Yes	No	No	Yes	No	No	No
2	No	No	No	Yes	No	No	Yes	No	No	No	No
3	No	No	No	Yes	No	No	Yes	No	No	No	No
4	No	No	Yes	No	No	Yes	No	No	No	No	No
5	No	No	Yes	No	No	Yes	No	No	No	No	No
6	No	Yes	No	No	No	No	No	No	No	No	Yes
7	Yes	No	No	No	No	No	No	No	Yes	No	No
8	No	No	Yes	No	No	No	No	No	No	Yes	No
9	No	No	Yes	No	No	No	Yes	No	No	No	No
10	No	No	Yes	No	No	Yes	No	No	No	No	No

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