

UNIVERSITY OF COLOMBO – SRI LANKA

FACULTY OF ARTS

SPECIAL DEGREE EXAMINATION IN ARTS – PART I

FIRST SEMSTER FINAL EXMAINATION – 2017

GYG 2128 CARTOGRAPHY

TIME: **TWO (02) HOURS**

Answer **five (05)** questions selecting **three (03)** from part I, and **two (02)** from part II.

Use of calculator is allowed.

Drawing papers, Tracing papers and Graph papers will be provided.

A Random Number Table is attached to the question paper.

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Part I

- I) I) What is meant by cartography? (02 Marks)
- II) Explain briefly how traditional cartography is distinguished from modern cartography. (03 Marks)
- III) “Although modern cartography techniques have made a few developments in mapping they still have weaknesses.” Explain this statement. (03 Marks)
- IV) Explain briefly with examples how modern mapping techniques could help towards a better understanding of physical and human phenomena apart from producing maps. (04 Marks)

V) Discuss briefly with examples how cartographers incorporate both spatial and non-spatial data to generate a map.

(04 Marks)

(Total Marks 16)

2) I) State the two principals that are used to calculate the minimum and maximum number of edges in a road network.

(02 Marks)

II) Explain with examples why geographers are interested to study the connectivity of networks in the real world.

(03 Marks)

III) Using the Figure No- 01

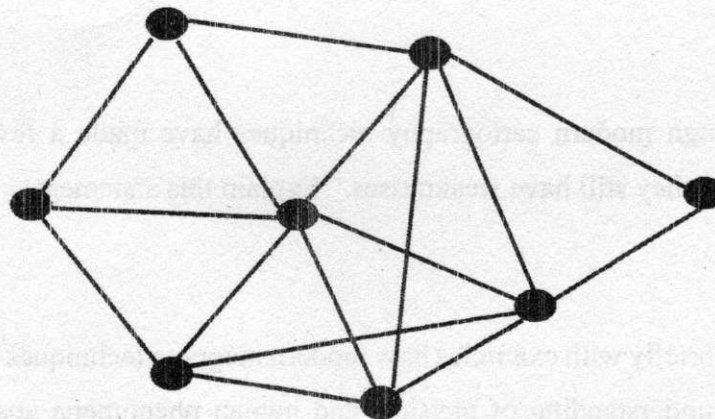
a) Calculate the actual number of circuits and maximum possible number of circuits.

(03 Marks)

b) Calculate the beta index.

(03 Marks)

Figure No- 01



IV) The results of a hypothetical transport network analysis are given below. Interpret the results.

- a) Number of Edges: 4
- b) Cyclomatic Number: 4
- c) Alpha Index: 0.12
- d) Beta Index: 1.3
- e) Gamma Index: 0.542

(05 Marks)

(Total Marks 16)

- 3) I) Map No- 01 shows the distribution of 20 plants in a particular study area. Calculate the distribution of plants by using the most suitable technique.

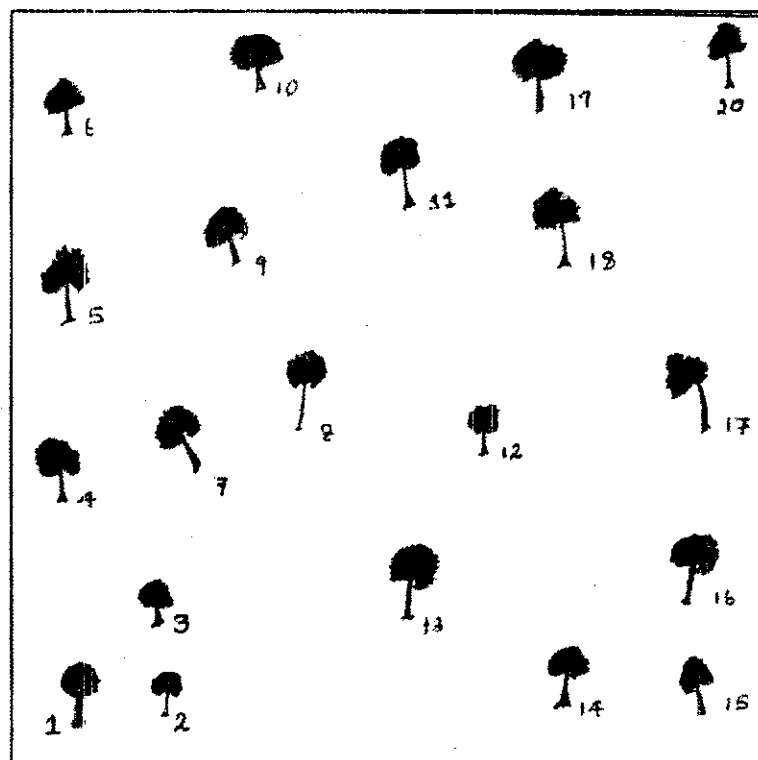
(scale of the map: 1 cm = 10 m)

(12 Marks)

- II) Elaborate your results with a suitable diagram.

(04 Marks)

Map No 01



1cm = 10m

(Total Marks 16)

- 4) I) Map No 02 shows the location of 13 villages in a Grama Niladhari Division (GND) and Table No 01 shows the total population of each village. Using both map and table, find the most suitable place for locating a service center.

(07 Marks)

- II) What are your suggestions to make your results more realistic added in section 4.(I)?

(05 Marks)

- III) 'Standard Distance Method' would be useful to identify the significance of distribution of settlement in an area. Explain briefly with hypothetical data and diagrams.

(04 Marks)

Table No 01

Village	Population
A	2275
B	3522
C	2213
D	4739
E	1729
F	3516
G	7095
H	3486
I	1613
J	2338
K	1590
L	1487
M	1554

(Total Marks 16)

Part II

5. I) Table No -- 02 shows the total land area and number of affected people due to the last flooding event in 15 cities of a country. Using a suitable cartographic technique test the hypothesis that the two variables are evenly distributed.

(15 Marks)

II) Comment on your results.

(06 Marks)

III) Explain briefly the merits and demerits of the technique that you have used in question no 5.I.

(05 Marks)

Table No- 02

Name of City	Total land Area	Number of Affected People
A	47782	3514
B	20237	2074
C	36713	1383
D	41192	1537
E	28771	3411
F	38778	3553
G	22664	1864
H	22107	1686
I	27575	3503
J	24253	2691

K	28786	2963
L	31412	2127
M	23912	2141
N	24052	2123
O	32248	1978
TOTAL	450,482	36,548

(Total Marks 26)

6) I) Provide three reasons why cartographers have to choose proper sampling methods for their studies. (03 Marks)

II) A land use pattern of an area is shown in Map No 03. Make an estimation of the land use patterns by employing the random sampling technique. Take 20 points out of the total population for your evaluation. Use a 1×1 cm grid.

(18 Marks)

III) Interpret your results.

(05 Marks)

(Total Marks 26)

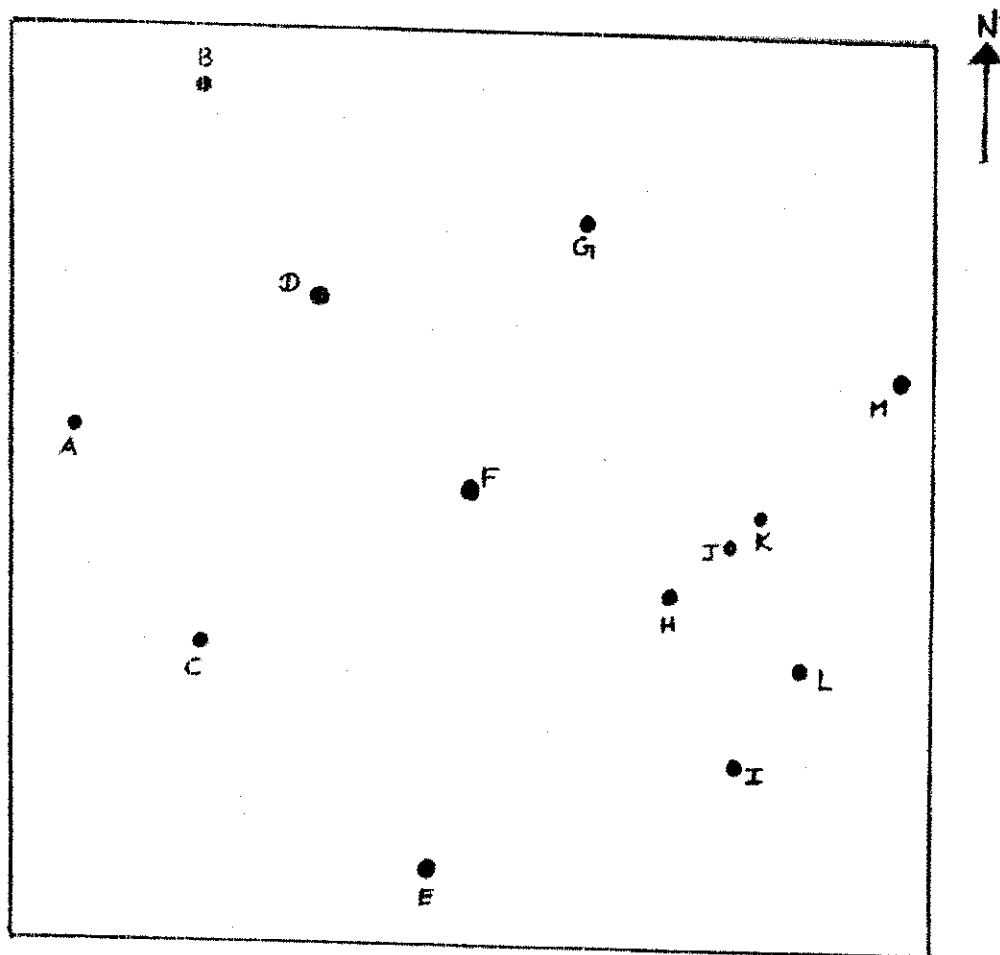
7. I) Three aerial photographs the size of 32×32 cm and 60% forward overlap at the scale of 1: 40, 000 have been taken for a study. The numbers of the photographs are 37, 38 and 39.

a) Shade the area on a suitable diagram that shows the forward overlap area from aerial photographs no. 39 to no.37. (Use 1cm: 5cm as your scale)

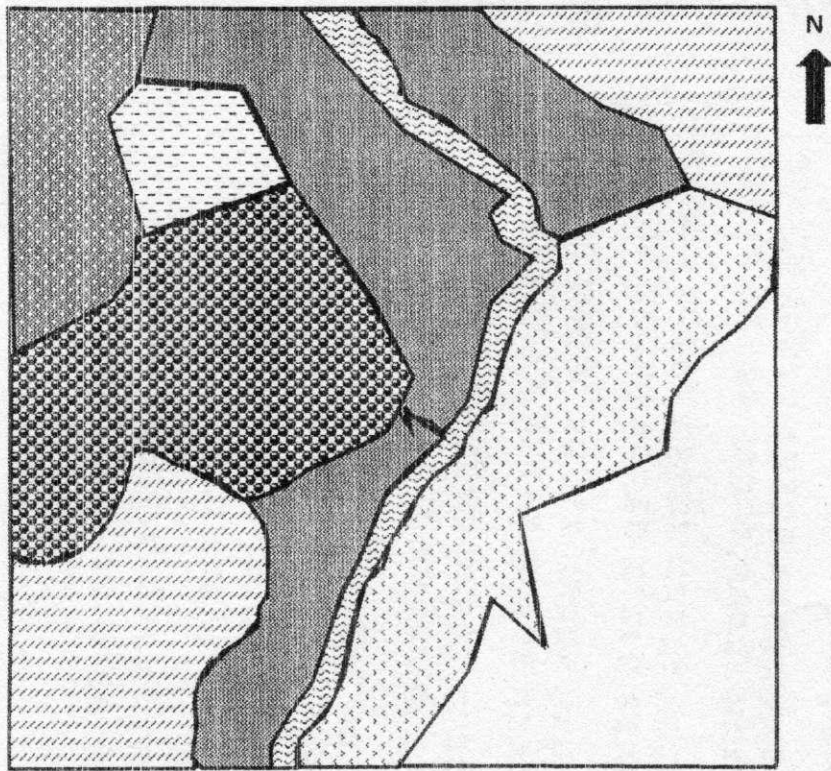
(04 Marks)

- b) Compute the true land area in hectares identified in 7.1.(a).
(04 Marks)
- c) A land area which has $4\text{km} \times 5\text{km}$ as its extent is shown in the aerial photograph.
Calculate the extent in sq.cm.
(04 Marks)
- II) a) Explain the uses of the following geometrical features of a vertical aerial photograph.
- (i) Flying height of the aircraft
 - (ii) Focal length of the aerial camera
 - (iii) Isocenter on the terrain
 - (iv) Angle of view
- (04 Marks)
- b) Show with an example, how the scale of an aerial photograph differs when the focal length is changed from a normal angle to a super wide angle of the camera.
(04 Marks)
- c) What is meant by vertical aerial photographs?
(03 Marks)
- d) Explain the benefits of taking vertical aerial photographs.
(03 Marks)









(Total Marks 26)



1:50000



1: 50, 000

	Sea		Coconut
	River		Homestead
	Tank		Chena
	Forest		Paddy