

UNIVERSITY OF COLOMBO – SRI LANKA

FACULTY OF ARTS

SPECIAL DEGREE EXAMINATION IN ARTS (GEOGRAPHY) – PART III

SECOND SEMESTER FINAL EXAMINATION – 2017/2018

GYG 4280 – GIS APPLICATIONS

Two Hours (02)

Answer any three (03) questions only.

01.

- I. What is Interpolation? (2 marks)
- II. Name FOUR methods of Interpolation that is used by the Arc GIS software. (4 marks)
- III. Select any TWO methods that you stated in 01.II and compare the similarities and dissimilarities that you have identified. (6 marks)
- IV. Discuss with suitable examples the practical applications of interpolation in decision making. (8 marks)

02.

- I. What does the term “TIN” stand for? (2 marks)
- II. Assume that you have been asked to construct a Digital Elevation Model (DEM) for an area determined by a development project in the upper catchment of the “Uma Oya” basin. Explain in brief, the sources of data that can be used as input in the process of constructing the DEM. (4 marks)
- III. Assume that you are given a point shape file with elevation values. Briefly state the process of constructing the Digital Elevation Model (DEM) using the above mentioned file. (6marks)
- IV. “Applications of the DEM depend on the level of accuracy and the level of accuracy depends on the requirement” Examine this statement briefly. (8 marks)

03. “Applications of GIS are limited only by the imagination of those who use it” (Jack Dangerman). Critically examine the use of GIS in regional geography with reference to planning and decision making.

(20 marks)

04.

- I. What is Geoprocessing?
(2 marks)
- II. Explain any THREE geoprocessing techniques with suitable diagrams.
(6 marks)
- III. "None of the tasks in spatial analysis can be completed without geoprocessing tools" Critically examine the above statement.
(12 marks)

05. Assume that you are the GIS specialist on the team assembled for the purpose of developing a flood management strategy for the Madurawala Divisional Secretariat Division. Before moving on to the management strategies, the team has decided to study the impact of previous floods within the DSD. Your task is to perform an impact assessment and prepare a map under three categories: High impact, Moderate impact, and Low impact.

- I. What are the data that you require in order to assess the impact of floods in the Madurawala DS Division?
(3 marks)
- II. Briefly explain any tool that can be used in impact assessment based on Arc GIS software.
(3 marks)
- III. Compile the methodology of the impact assessment that you propose, as a flow diagram.
(14 marks)

06.

- I. What is Remote Sensing?
(2 marks)
- II. Name any THREE software applications that can be used for digitizing land use patterns based on satellite images.
(3 marks)
- III. Explain in brief, the use of Keyhole Markup Language (KML) files.
(3 marks)
- IV. Select ONE example and briefly explain the applications of GNSS/ GPS in planning.
(4 marks)
- V. "Applications of GNSS/ GPS, Remote Sensing, and GIS are always interrelated" Discuss the statement with suitable examples.
(8 marks)