Second Semester Examination
2021/2022 Academic Session

July/August 2022

EAK382 – Geographic Information Systems

Duration : 1 hour

Please ensure that this examination paper contains **THREE (3)** printed pages before you begin the examination.

Instructions: This paper contains **TWO (2)** questions. Answer **ALL** questions.

All questions **MUST BE** answered on a new page.

1.   As one of the engineers in a prominent consultant, you are required to propose the new township at Simpang Empat, Penang. Using your expertise in GIS, explain the suitable spatial analysis modules in GIS that can be used to solve **ONE (1)** of the following spatial problems.

       (a)   Finding location of a new landfill in Seberang Perai Selatan.

       OR

       (b)   Design of a new route that connects to Simpang Empat to Batu Kawan via the current access of PLUS highway.

You are required to provide the followings to solve the selected spatial problem (a) **OR** (b):

       (i)   Describe **FIVE (5)** key elements of a map required to prepare the criterion maps.

[10 marks]

       (ii)   Justify the most appropriate spatial analysis and spatial model to apply in producing the final suitability map or best route map.

[4 marks]

       (iii)   Explain **THREE (3)** elements of data quality such that it preserves the accuracies required in spatial analysis.

[6 marks]

2.   (a)   Reality can be represented in GIS by assigning each item or objects to a specific dataset. In spatial data, data can be represented in layers or objects and stored in the computer in a simplified manner. The most common way of doing this is to break down all geographic features into a specific entity. By referring to **Figure 1**:

Figure 1

(i)   Using suitable sketch, describe the vector and raster dataset that can be collected from **Figure 1**.

[8 marks]

(ii)   Classify the attribute categories for the vector dataset collected in (i).

[4 marks]

(b)   A consultant has appointed a solution provider to develop a website to compile data for all projects done by the company. The information gathered on the website includes maps, boreholes, landuse, description of project and value of the project, submission datelines, etc.

(i)   Briefly explain **EIGHT (8)** reasons for failures in GIS project implementation when the project initiated. Answer must be based on the website developed.

[8 marks]

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