

SGO1910 – Geographical Information Systems

WRITTEN EXAMINATION

3 December 2018 (3 hours)

No support materials are permitted, except for dictionaries that have been submitted to the Faculty of Social Sciences for control.

You may write your answers in Norwegian, Swedish, Danish or English.

Examination

No support materials, except for dictionaries that have been submitted to the Faculty of Social Sciences for control, are permitted.

Results will be available in Studentweb on 21 December 2018. The results are considered official upon publication in Studentweb and students are responsible for checking their result at this time. If you want an explanation for your grade, you must apply within one week after the result is published. The deadline for appealing your grade is three weeks after the announcement of examination results or three weeks after an explanation of the grade has been given. Information on procedures for requesting explanations and appeals is available on the course page.

The exam consists of three parts.

Part 1. Five questions (25% of grade)

Part 2. One task (15% of grade)

Part 3. Two out of three essays (60% of grade)

Please read the questions carefully.

You may write your answers in Norwegian, Swedish, Danish or English.

Good luck!

Part 1. Five questions (25% of grade)

Answer **ALL** of the following questions.

Q1.1

Describe the difference between a **reference map** and a **thematic map**?

(max 150 words)

Q1.2

Describe what in GIS is meant with **error** and **uncertainty**?

(max 150 words)

Q1.3

Describe what is meant with **discrete** and **continuous geographic features**? Give an example of each?

(max 150 words)

Q1.4

Describe what is meant with **in-situ** data collection and **remote sensing**? Give an example of each?

(max 150 words)

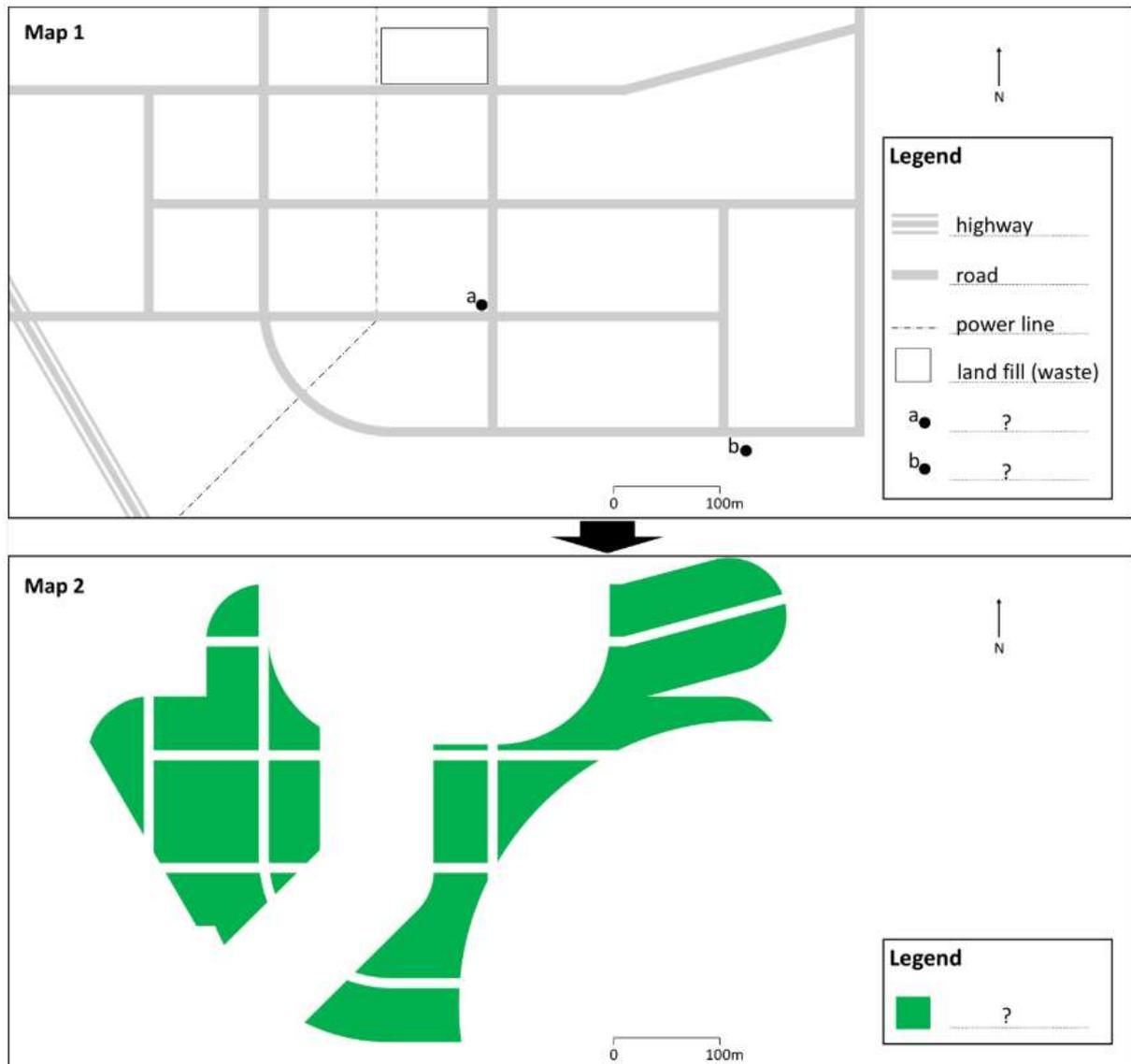
Q1.5

Which four types of **distortion** may take place in map projections?

(max 150 words)

Part 2. Task (15% of grade)

Q2



Above you see two maps. Give an example of what could be located at the points a and b in map 1? Give an example of what could be indicated by the green area in map 2? Explain step by step and as detailed as possible how the output in map 2 is created based on the input in map 1? Mention all GIS procedures.

(max 250 words)

Part 3. Essays (60% of grade, each answer is worth 30%)

Please write an essay on **TWO** of the following three questions of your choosing (*max 400 words each*). **Leave the answer box of the other of the three questions blank.**

If you wish you may use references to the course literature articles (this is not necessary when it is a reference to the text book or the lectures).

Q3.1

Give a description of what a **network** and a **network analysis** is? Discuss different types of network analyses and how these are carried out. Use all following key words in your essay: distance decay, facility-to-demand, impedance, location-allocation, maximise coverage, service area

(max 400 words)

Q3.2

Identify and discuss potential pitfalls of spatial analyses such as **modifiable areal unit problem** (MAUP) and **ecological fallacy**. Describe what **spatial autocorrelation** is and how it can be measured. Discuss how pitfalls like MAUP and ecological fallacy can be relevant for spatial autocorrelation tests. Use all following keywords in your essay: Tobler's first law of geography, MAUP, ecological fallacy, spatial heterogeneity, scale.

(max 400 words)

Q3.3

Discuss what the term **qualitative GIS** implies and provide examples of methods and/or cases that involve qualitative GIS. Furthermore, how is qualitative GIS related to the critique of traditional GIS? Use all following keywords in your essay: method, quantitative, situated, 90s, data

(max 400 words)