The exam is made up of three parts and you should answer all of them. The parts are weighted as indicated in the parentheses.

**Part 1, Briefly explain these concepts (20%)**

a) **Spatial resolution, spectral resolution, radiometric resolution** and temporal resolution. Hint: give examples with satellite data and aerial photographs

b) Point cloud
c) Multiuser geodatabase
d) Geographic transformation (in GIS)

**Part 2, Cartography (40%)**

Provide an assessment of the map shown below. If you think the map could be improved, suggest some ways on how. Ground your answers on why these changes would improve the map.
Part 3, Short essay (40%)

You have been employed by a major multinational energy company and are working in their GIS department. Your group have been tasked to assess the potential to generate solar energy in a tropical country close to the equator. You soon find published GIS-algorithms that can calculate direct solar energy at ground level (kWh/day). These algorithms rely on an accurate digital elevation model for the calculations. However, the calculations take a very long time and you realize you need to compromise DEM resolution to be able to do the calculations. The main deliverable would be a map where you show optimal site(s) for a possible solar power plant, based on solar energy input, but also proximity to the electrical grid of the country, and avoiding conflicts in land use (for example agriculture).

Describe how you would tackle the problem;

• Which datasets do you need and how do you judge accuracy in these datasets?
• Discuss trade-off between high- and low resolution DEM
• Database design?
• Consider also collect some data in the field and check accuracy of the data you already have, how would you do that?
• Which GIS analyses are necessary?
• Cartographic considerations?

Sketch a simple map layout showing how you would present the data and include the sketch in your essay.