Selftest for applications to the Master Programme "Geomatics" at University of applied sciences Neubrandenburg

Please try to answer the following questions. If you have serious difficulties to answer more than 50% of these questions, an application to the Master program Geomatics does NOT make sense, because you are lacking the necessary basics for the entry level.

GIS:

What is a GIS?

Which GIS software products do you know?

Data Bases:

What is the difference between a database and an Excel-table?

You are asked by an airline to develop a data base. Please translate the following extract of the flight situation into an entity-relationship model: "A flight consists of one or more flight legs, flight legs belong to one flight. Flight legs start at one airport and end at another airport."

Geodetic coordinate systems:

What is the difference between WGS84 and UTM?

What is geoid undulation?

Photogrammetry:

What is the difference between a photo taken by a consumer camera and an orthophoto?

What does the Structure from Motion-Algorithm (SfM) do?

Remote Sensing:

What is near Infrared (NIR)?

Mathematics:

Solve the following system of linear equations: $27x + 18y = 4$; $2x - 20y = 10$

Solve the following quadratic equation: $12x^2 - 18x = 9$

Calculate the first derivative df/dx: $f(x) = 10x^2 + 1/x + 2\sin x + 3$

Programming:

Are you able to write a simple program in at least one programming language?

Write a short program in that language that counts back from 10 to 0

Measuring Technology:

What is sensitivity of a sensor, what is resolution?

How does a MEMS-sensor work?

Statistics:

Given the values 1,2,3,4,5,6,9: calculate the mean, median, variance and standard deviation.