MSc study programme WATER AND ENVIRONMENTAL ENGINEERING

ENTRANCE EXAM TEST

eample

Conditions:
• You will only need a pen and a sheet of paper for the test.
• Please write your name and surname at the top of each sheet of paper.
• The test will take 50 minutes to complete.
• The test consists of 10 open-ended questions. Please answer each question with several meaningful sentences. Use legible handwriting to ensure good readability in photograph/scan, as well as on a screen. If appropriate, you may include simple drawings.
• Answer to each question is worth a maximum of 10 points.
• The minimum sum of points is 40 to pass the entrance exam test.

Questions:
1. **Hydraulics - fundamentals**: explain principle of conservation of energy in flow of real liquid and write appropriate equation

2. **Hydraulics - open-channel flow**: discuss rating curve and describe how it can be predicted using Chezy formula

3. **Hydrology - fundamentals**: summarize basic hydrological parameters, define them and describe their units

4. **Hydrology - rainfall and runoff**: define rainfall and runoff, explain their mutual relation, discuss application of rainfall-runoff models in hydrology

5. **Water management**: explain basic water purification techniques and how they are exploited in water processing/treatment plants

6. **Water management**: describe types of wastewater and summarize major parts of wastewater treatment plant

7. **Hydraulic structures**: explain function of navigational lock and describe its parts

8. **Environmental engineering**: discuss role of Darcy’s law in groundwater hydrodynamics, describe quantities mutually related in Darcy’s formula

9. **Environmental engineering**: summarize basic physical properties of soil and explain hydraulic conductivity

10. **Environmental engineering**: discuss role of water drainage and types of drainage structures