

**CHEM-E4120 Quantitative Instrumental Analysis
Examination 30.11.2023 at 16.00 – 18.00**

Answer either in English or Finnish!

Answer only to **3 questions/tasks** upon your own choice! Please, keep your answers in Word format or equivalent (**do not** change to .pdf or Apple formats). Send your answers as normal email attachment and not using any other document exchange methods.

Please, add in the **file name** your **surname**, and add here below also your **whole name** and **student number**:

1. What is the impact of precision on analytical measurements? How precision can be made better? How accuracy/trueness of an analytical method can be verified/examined?
2. Detection of photons, ions and electrons in analytical instruments?
3. Compare Total Reflection X-ray Fluorescence and X-ray Fluorescence excited by an electron beam from the samples.
4. Compare HPLC and FIA.