



Aalto University
School of Science and Technology
Puu-127.4020 Process Water Treatment 3cr / Olli Dahl

Exam 29.03.2011

Compulsory questions for all (1-3)

1. How is chemically treated water processed from raw water? (unit processes and their essential operating principles and order). 5p.

2. Explain the following words, abbreviations or principles. 5p (0,5p each).

- a. Electrolytic flocculation
- b. Anaerobic treatment
- c. AOX
- d. Concentration polarisation
- e. TOC
- f. Sedimentation stages in a clarifier
- g. LC_{50}
- h. Flotation
- i. Micro-filtration
- j. AOP techniques in wastewater treatment

3. Briefly introduce the following water quality parameters and their determination methods. Answer only **two (2)** questions. 5p (2,5 p each).

- a. Determination of hardness of water
- b. Determination of suspended solids
- c. Determination of alkalinity

Choose two (2) from the following questions (4 to 6) in which to answer:

4. Common deposits in the pulp and paper industry and methods for controlling them? 5p.

5. Membrane filtration in wastewater treatment, grades and their suitability in removing various impurities. 5p

6. Influent contains 65t COD/d. Floc load (max) is 0,25 kg COD/kg return sludge. Calculate return sludge amount (min) t/d. Include a figure and briefly describe the stages of a typical activated sludge process. 5p.