



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

Exam 19.12.2011

Compulsory questions for all (1-3)

1. Refining of raw waters into process waters. 5p.

2. Explain the following words, abbreviations or principles related to waste water treatment. 5p (0,5p each).

- a. Sedimentation in a clarifier
- b. AOX
- c. Vaporisation principle
- d. Tertiary treatment system
- e. Anaerobic treatment
- f. Effluent oxidation
- g. Filtration techniques
- h. Electrolytic flocculation
- i. Flotation
- j. Stripping

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

- a. Biochemical oxygen demand
- b. Hardness of water
- c. Toxicity

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

4. Influent contains 46 t COD/d. Floc load (max) is 0,2 kg COD/kg return sludge. Calculate return sludge amount (min) t/d. Include a figure and briefly describe the stages of typical activated sludge process. 5p.

5. Utilization of fibre sludge and bio sludge from forest industry wastewater treatment systems. 5p.

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