CE 213-A

ASSIGNMENT- 6 (Water Pollution – Treatment processes)

Q1. If a ground water contains H_2S at concentration of 2 mg/L, determine the concentration of H_2S in head space of a closed tank containing the ground water at 20oC. Given that for H_2S, Henry's constant (H) is equal to 5.15×10^2 atm at 20°C.

Q2. Determine the settling velocity of a spherical particle with diameter of 200 micron and a specific gravity of 2.3 in water at 25degC? Comment on settling behaviour of this type of particles.

Q3. A sand particle has an average diameter of 1 mm and a shape factor of 0.90 and a specific gravity of 2.1, determine the terminal velocity of the particle settling in water at 20°C (kinematic viscosity of water=1.003×10^{-6} m^2 /s and specific gravity=1). Drag coefficient can be computed using the following equation:

$$C_D = \frac{24}{Re} + \frac{3}{\sqrt{Re}} + 0.34$$

Q4. The chlorine consumption in the treatment of 10000 m3/d of a river water is 6kg/d. the residual chlorine after 30 minutes contact is 0.40 mg/L. Calculate the chlorine dosage in mg/l and the chlorine demand of river water.

Q5. A surface water flow 25000 m3/d is coagulated by adding 50 mg/l of ferrous

sulphate and an equivalent dose of lime. How much lime is required at a purity of 85 % CaO.

.