S1: M. Sc. Water Science	**Environmental Microbiology**	**13.02.2017**
Name:	**Signature:**	
Matriculation No.:	**Participation No.: 1, 2 or 3** (circle appropriate)	
Prof. Meckenstock / Prof. Siebers	*PKZ: 1722 / 40105 / 40191*	

Part A: Prof. Meckenstock

1) A contaminated aquifer contains a high background of 980 mg/l SO_4^{2-}. How much acetate can be oxidized with that by sulfate-reducing bacteria?　　　**(15 points)**

2) How much energy can be conserved by that reaction?　　　**(5 points)**

3) Describe the differences between aerobic and anaerobic degradation of aromatic compounds **(10 points)**

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4) How much organic carbon (carbohydrates, CH_2O) can microbes oxidize per second and cm square to CO_2 in one cm depth of a lake sediment if the concentration of molecular oxygen as electron acceptor in the overlaying water is 200 µM?
(Diffusion coefficient of O_2 at 20° C is D = 21.2 x 10^{-6} cm^2 s^{-1})   **(20 points)**

Prof. Meckenstock:

Prof. Siebers:

Total: