**Task 1.1**

Water 25 000 m3/d should be pumped from A to B. It is suggested internal pipe diameter 200 mm. Required outlet pressure at B is 2 bar (above atmospheric)

a) How much inlet pressure is needed at pump station A?

b) If the water flows back from B to A, without pumping, what will the outlet pressure be?

c) Consider the system. Suggest changes if the calculations appear to give cause for this

Questions a) and b) correspond to task 1 in the compendium, but we will now include friction losses



**Task 2.2**

The figure below illustrates cross section of transport pipes between wells completed on the seabed and processing platform.

Inner pipe diameter: 0.2 m

Tubing wall: 0.5 cm

Cement jacket around the pipe: 4cm

Pipe length: 10,000m

Oil rate: 5000 m3 / d

Oil density: 800 kg / m3

Temperature at the well: 40 C

a) Estimate the : U for heat transfer between the pipe and the sea outside.

b) Estimate temperature along the pipe

