

CHEM-E7160 31.5.2023 - Fluid flow in process units.

5 pts each question.

1. Explain briefly the following (1 point each)
 - a. Reynolds stresses
 - b. Bernoulli equation
 - c. film theory for heat and mass transfer and its relation to fluid flow
 - d. moving mesh
 - e. flow regimes in fluidization
2. Show that at high enough flow velocities pipe friction is a constant that depends only on relative pipe roughness
3. Estimate pressure drop when peas are dried with air in a fixed bed. Air flowrate is 500 m²/h, density is 1 kg/m³, viscosity $2 \cdot 10^{-5}$ Pas. Fixed pea bed thickness is 20 cm and diameter 50 cm.

