**Preliminary Exam-Kyle Thompson**

Prepared by Hassan

1. What is the difference between incompressible and constant density. Give examples.
2. Pohlhausen method does not yield the correct separation point, Can you suggest ways to improve it.
3. RANS methods are widely used in industry despite the fact that they have limitations. What can you suggest to improve them.
4. In Hypersonic flows, thermal and chemical nonequilibrium effects prevail. Derive an expression for change of entropy. If you mix two gases which have the same pressure and temperature, what happens to the total entropy.
5. Given Gibbs free energy, how can you calculate all relevant thermodynamic quantities that are required in a reacting flow solver.