●不可使用電子計算機

1. Why the study of fluid mechanics is important? (15 %)

2. Explain (1) Re, (2) Boundary layer flow, (3) Laminar flow, (4) Turbulent flow, and (5) Entrance region effect. (Each 6%, total 30%)

3. Discuss the important characteristics of   the Navier-Stokes Equations. (15%)

4. The velocity components of a three-dimensional flow are given in the following:

   u=7xzt, v=9yxz, and w=3xzty.   Obtain the acceleration field (20%)

5. Standard air enters a 0.7 m diameter pipe.   The volumetric flow rate is 3 m**3/min. Determine whether the flow is laminar or turbulent. (20%)

   (density=3 kg/m**3, viscosity=0.00034 Ns/m**2)