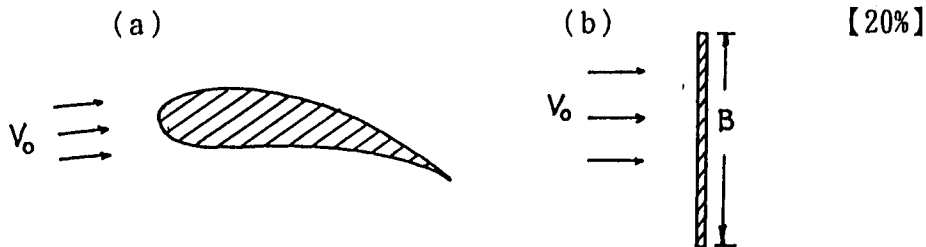


一、就您所知，血管內血液流動之運動數學模式為何？假設自定。【20%】

二、如何計算或量測局部摩擦阻力 (local shear stress)。【20%】

三、試繪出作用於物體表面之壓力與阻力圖，並導出阻力 F_D 和升力 F_L 公式



四、Water flows through the contraction at a rate of $0.707 \text{ m}^3/\text{s}$. The head loss due to this particular contraction is given by the empirical equation

$$h_L = 0.2 \frac{V_2^2}{2g}$$

Here V_2 is the velocity in the 20-cm pipe. What horizontal force is required to hold the transition in place if $p_1 = 70 \text{ kPa}$?

【20%】

五、(a) Describe the method of dimensional analysis.

(b) What are the path line, stream line and streak line?

【20%】