

淡江大學九十三年度碩士班招生考試試題

系別：機械與機電工程學系

科目：流體力學

准帶項目請打「○」否則打「×」
✓ 簡單型計算機

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1. A fluid flow has the following velocity components: $u=1$ m/s and $v=2x$ m/s.
 - a) Find an equation for and sketch the streamlines of this flow. (10%)
 - b) Find the vorticity. (10%)

 2. The meniscus(液體的接觸面) between the oil and water is in the position shown in Figure 1 when $p_1=p_2$. Calculate the pressure difference ($p_1 - p_2$) which will cause the meniscus to rise 2 in. (20%)

 3. What is the pressure at A shown in Figure 2? Calculate the minimum force necessary to keep the gate closed. (20%)

 4. Calculate the mean velocities for these two-dimensional velocity profiles as shown in figure 3 if $v_c=3$ m/s (4×5%)

 5. Two cubic feet per second of ethyl alcohol are flowing in a moon station supply system as shown in figure 4. Calculate the pump horsepower. (20%)
- Note: (a) Gravitational acceleration on the moon is 1/6 that of the Earth's.
 (b) $(Sg)_{Hg}=13.57$; $(Sg)_{EA}=0.79$

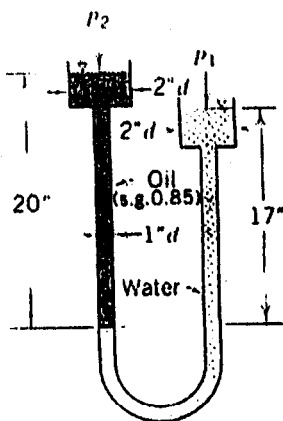


Figure 1

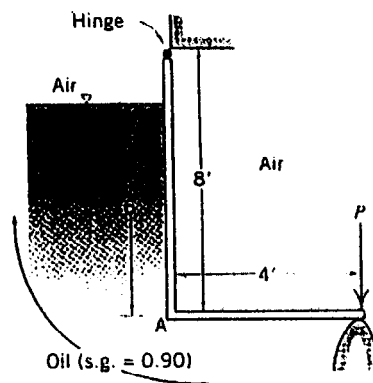


Figure 2

◀ 注意背面尚有試題 ▶

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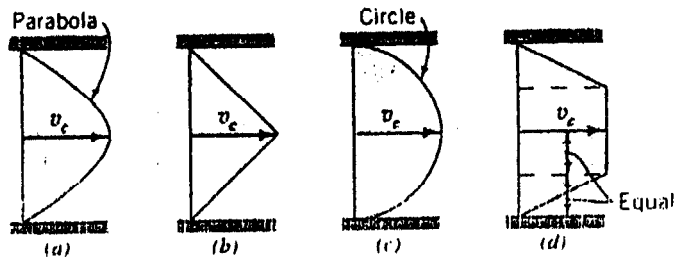


Figure 3

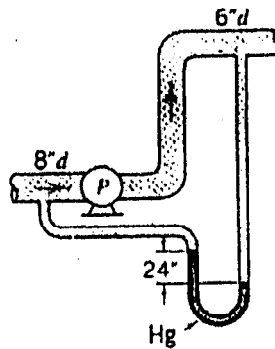


Figure 4