# 臺灣綜合大學系統106學年度學士班轉學生聯合招生考試試題

| 科目名稱 | 應用力學 | 類組代碼 | D09 |
|---|---|---|---|
| | | 科目碼 | D0991 |

※本項考試依簡章規定各考科均「不可以」使用計算機　　本科試題共計 二 頁

1. Knowing that the line of action of the force **Q** passes through point *C*, derive an expression for the magnitude of **Q** required to maintain equilibrium. (20%)

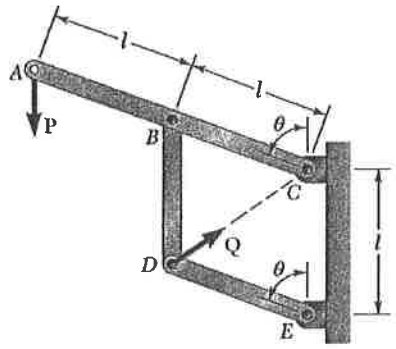


Fig. 1

2. The panel shown forms the end of a trough that is filled with water to the line *AA′*. Determine the depth of the point of application of the resultant of the hydrostatic forces acting on the panel (the center of pressure). (20%)

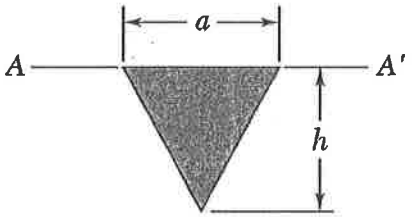


Fig. 2

3. The angle of static friction between the block of weight *W* and the inclined plane is $\phi$. For the angle shown in Fig. 3, what is the expression for *P* to move the block up the inclined plane. (20%)

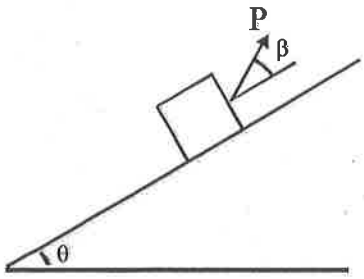


Fig. 3

 背面有題，請繼續作答。

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4. A slender rod of length $L$ and weight $W$ is attached to a collar at $A$ and is fitted with a small wheel at $B$. Knowing that the wheel rolls freely along a cylindrical surface of radius $R$, and neglecting friction, derive an equation in $\theta$, $L$, and $R$ that must be satisfied when the rod is in equilibrium. (20%)

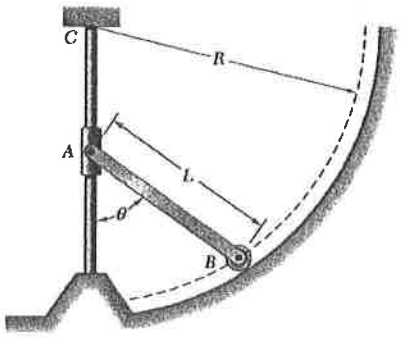


Fig. 4

5. Knowing that $m_B = 70\ kg$ and $m_C = 25\ kg$, determine the magnitude of the force $P$ required to maintain equilibrium. (20%)

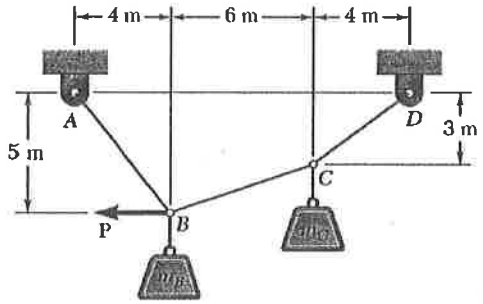


Fig. 5