

臺灣綜合大學系統

106 學年度

轉學生聯合招生考試

# 試 題

類組：D09

科目名稱：應用力學

科目代碼：D0991

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 三 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%)

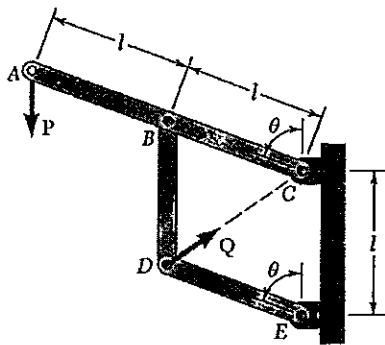


Fig. 1

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%)

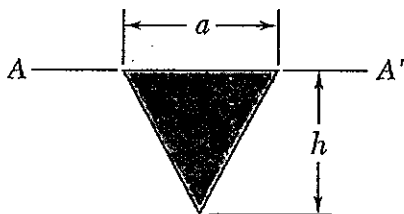


Fig. 2

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%)

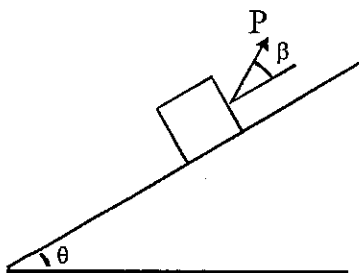


Fig. 3

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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%)

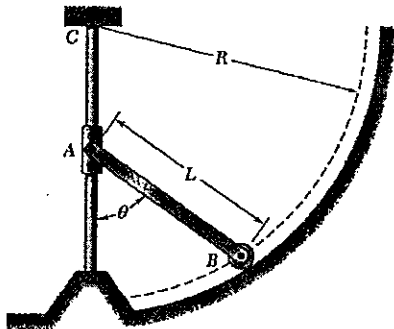


Fig. 4

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

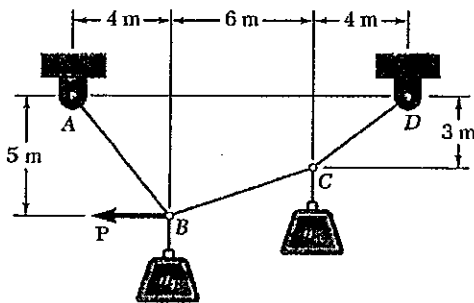


Fig. 5