臺灣綜合大學系統107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　一　頁

1. A slender rod of length L is attached to collars that can slide freely along the guides shown. Knowing that the rod is in equilibrium, derive an expression for the angle θ in terms of the angle β. (25%)

2. For the frame and loading shown, determine the components of all forces acting on member ABE. (25%)

3. Block A supports a pipe column and rests as shown on wedge B. The coefficient of static friction at all surfaces of contact is 0.25. Determine (a) the angle θ for which sliding is impending. (b) the corresponding force exerted on the block by the vertical wall. (Hint: $\tan 14.04^\circ = 0.25$, $\sin 14.04^\circ = 0.2426$, $\cos 14.04^\circ = 0.9701$) (25%)

4. Two bars AB and BC are attached to a single spring of constant k that is unstretched when the bars are vertical. Determine the range of values of P for which the equilibrium of the system is stable in the position shown. (25%)

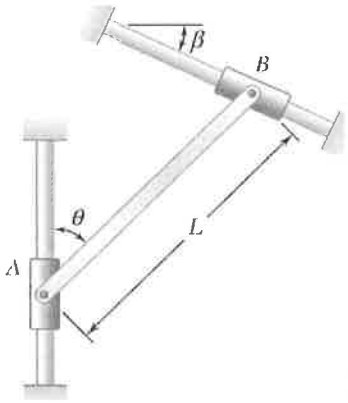

Fig. 1

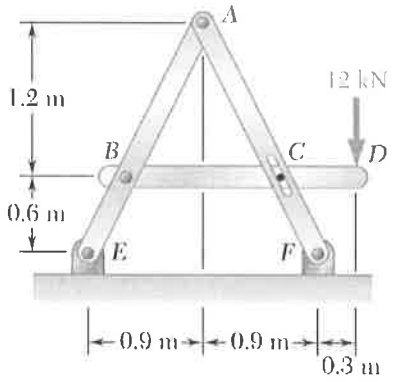

Fig. 2

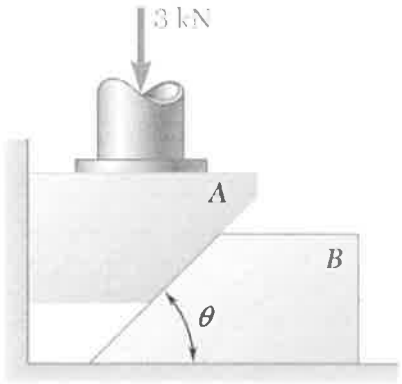

Fig. 3

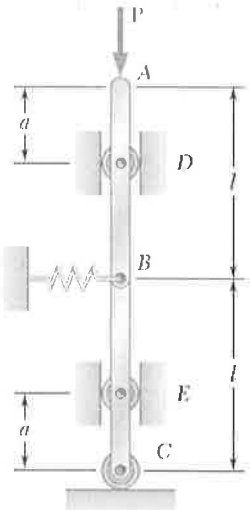

Fig. 4