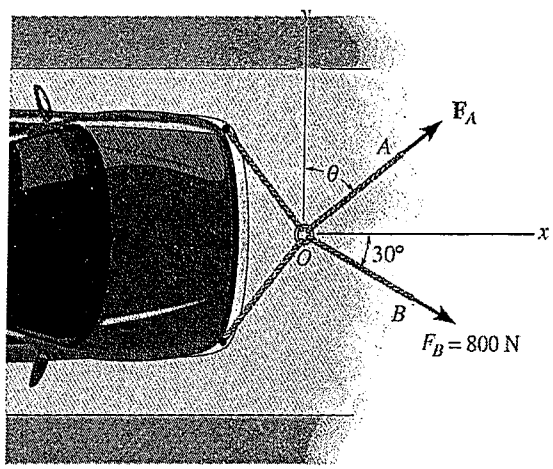
國立中山大學107學年度碩士暨碩士專班招生考試試題

科目名稱：靜力學【機電系碩士班丁組】　　題號：438004

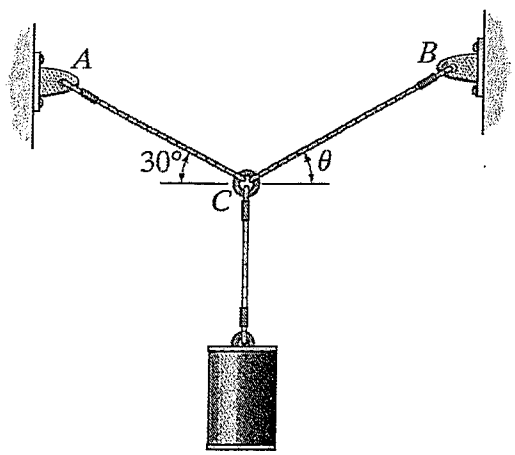
※本科目依簡章規定「可以」使用計算機（廠牌、功能不拘）（問答申論題）　　

1. 如圖一所示(**Figure 1**)，Determine the magnitude and direction θ of $\mathbf{F}_A$ so that the resultant force is directed along the positive x axis and has a magnitude of 1250 N. (10%)

2. 如圖二所示(**Figure 2**)，Determine the tension developed in wires CA and CB required for equilibrium of the 10-kg cylinder. Take θ =40°. (10%)



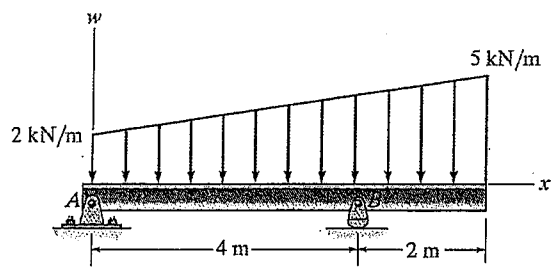
圖一 (**Figure 1**)



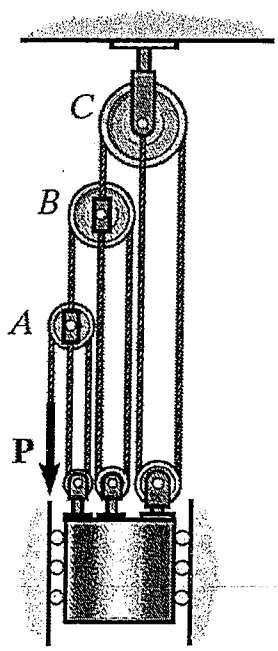
圖二 (**Figure 2**)

3. 如圖三所示(**Figure 3**)，Replace the loading by an equivalent resultant force and specify its location on the beam, measured from point A. (10%)

4. 如圖四所示(**Figure 4**)，Determine the force **P** required to hold the 50-kg mass in equilibrium. (10%)



圖三 (**Figure 3**)

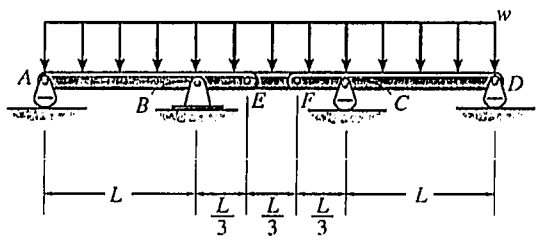


圖四 (**Figure 4**)

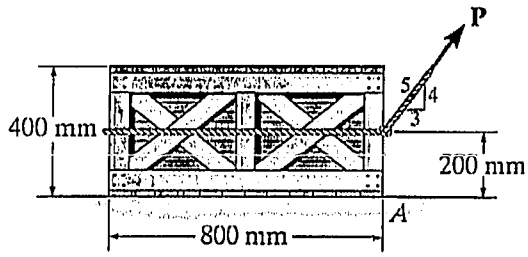
背面有題　　試題隨卷繳回

5. 如圖五所示(**Figure 5**)，Draw the shear and moment diagrams for the compound beam. The beam is pin connected at *E* and *F*. (20%)

6. 如圖六所示(**Figure 6**)，Determine the friction force on the 40-kg crate, and the resultant normal force and its position *x*, measured from point A, if the force is **P**=300 N. Take μ_s=0.5 and μ_k=0.2. (20%)

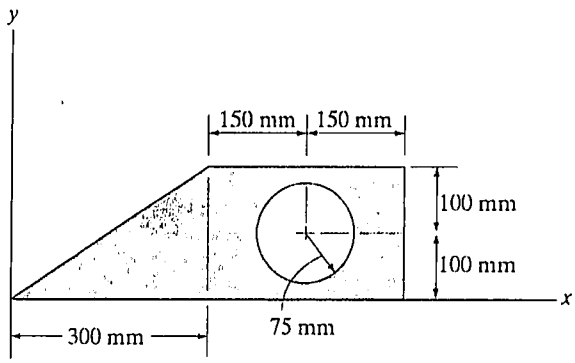


圖五 (Figure 5)



圖六 (Figure 6)

7. 如圖七所示(**Figure 7**)，Determine the moment of inertia of the composite area about the *x* axis, and determine the moment of inertia of the composite area about the *y* axis. (20%)



圖七 (Figure 7)