

科目：材料力學 適用：土木系(結構與應力組)

編號：442

- 考生注意：
1. 依次序作答，只要標明題號，不必抄題。
 2. 答案必須寫在答案卷上，否則不予計分。
 3. 限用藍、黑色筆作答；試題須隨卷繳回。

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- (1) Link BD is made of brass ($E = 15 \times 10^6 \text{ psi}$) and has a cross-sectional area of 0.50 in^2 (see Figure 1). Link CE is made of aluminum ($E = 10 \times 10^6 \text{ psi}$) and also has a cross-sectional area of 0.50 in^2 . Determine the maximum force P that can be applied vertically at point A if the deflection of A is not to exceed 0.015 in . (25%)

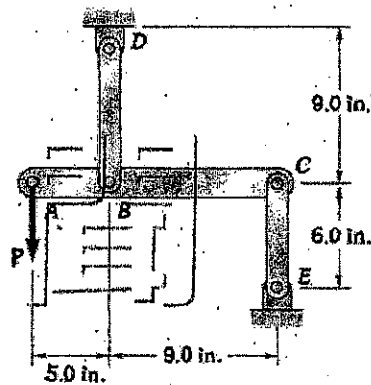


Figure 1

- (2) For the parabolic semisegment with $y = f(x) = h(1 - \frac{x^2}{b^2})$ shown in

Figure 2, determine (a) the moment of inertia I_x (13%), and (b) the moment of inertia I_y (13%).

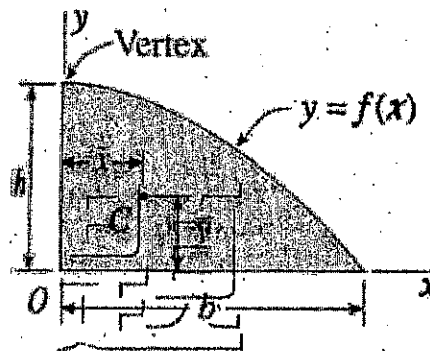


Figure 2

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(3) The beam is subjected to the distributed loading as shown in Figure 3.

Draw (a) the shear force diagram (12%), (b) the bending moment diagram (13%).

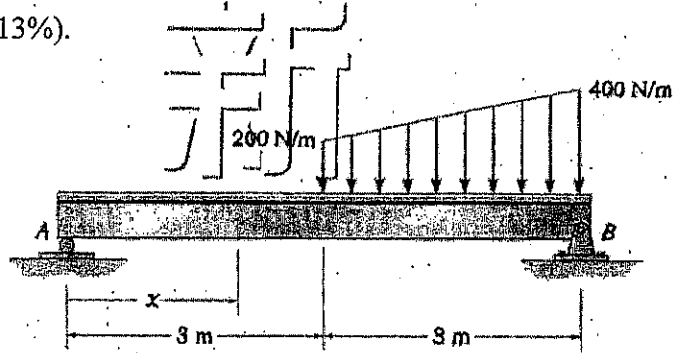


Figure 3

(4) The cantilever beam AB shown in the Figure 4 is subjected to a

triangular load acting throughout one-half of its length and a concentrated load acting at the free end. Determine (a) the

deflection curves (15%), and obtain (b) the deflection δ_B at point B

(5%), (c) the slope θ_B at point B (4%). EI is constant

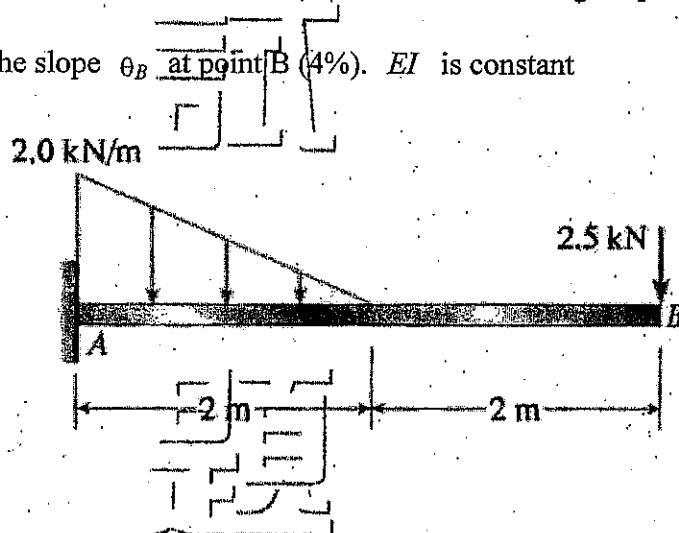


Figure 4