

科目：材料力學

適用：土木系(結構與應力組)

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) For the channel section shown in Figure 1, calculate (a) the distance \bar{y} to the centroid C (10%), (b) the moment of inertia I_{x_C} with respect to an axis through the centroid C and parallel to the x axis. (15%)

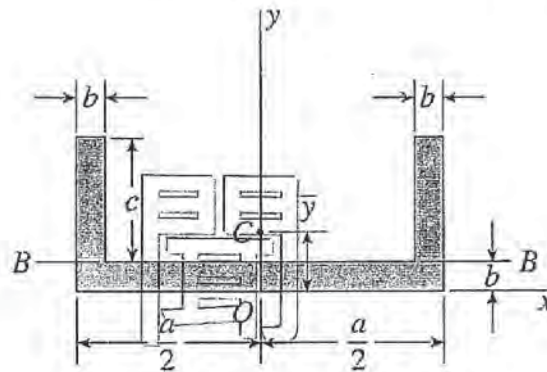


Figure 1

- (2) An axial member consisting of constant cross-section segments is loaded by force as shown in Figure 2. Determine (a) the displacement u_1 and u_2 at the loads (5% each, total 10%), and (b) the internal forces in each of the members (5% each, total 15%). (where $k_i = \frac{A_i E_i}{L_i}$ with $k_1 = 3k$, $k_2 = k$, $k_3 = 2k$; and $P_1 = P$, $P_2 = 2P$)

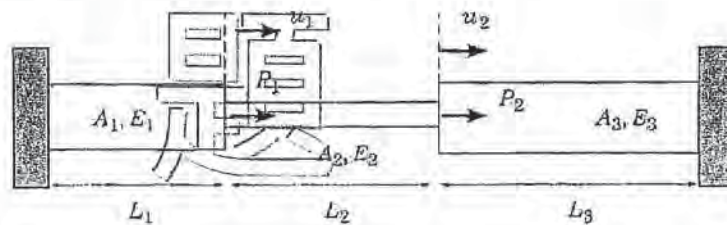


Figure 2

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(3) The stress acting on two planes at a point is shown in Figure 3.

Determine the normal stress σ_h . (25%)

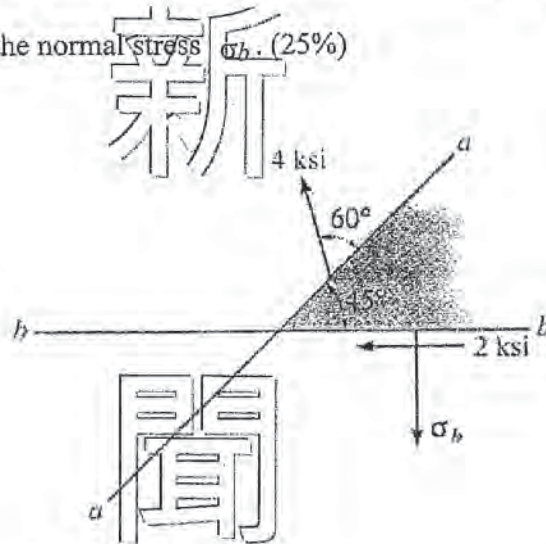


Figure 3

(4) A simple beam AB supports a uniform load of intensity q acting over the middle region of the span (see Figure 4). Determine (a) the angle of rotation θ_A at the left-hand support (12%) and the deflection δ_{\max} at the midpoint (13%).

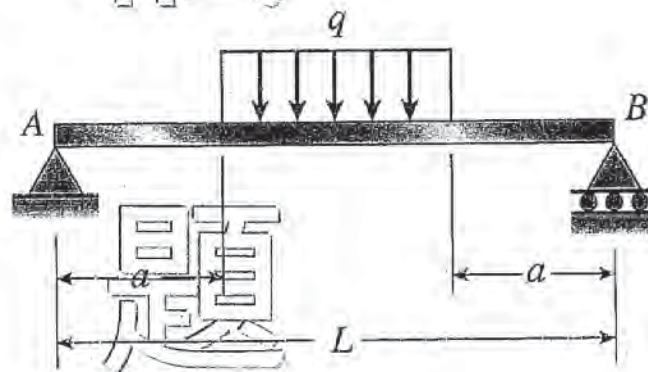


Figure 4