

淡江大學九十三年學年度碩士班招生考試試題

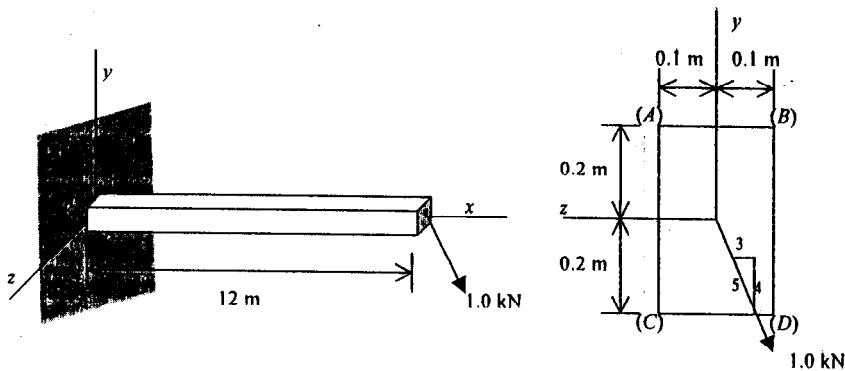
系別：土木工程學系

科目：材 料 力 學

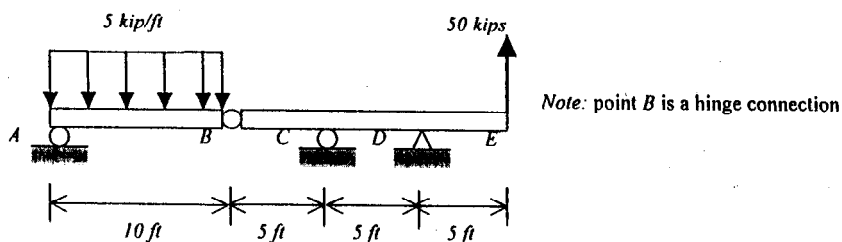
准帶項目請打「○」否則打「×」
○ 簡單型計算機

本試題共 1 頁

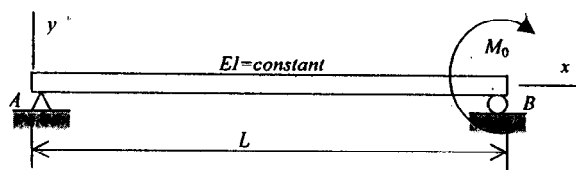
1. The rectangular shaped cantilever beam shown in figure is subjected to an inclined loading of 1.0 kN at the free end. Determine the maximum bending stress developed at each corner (A, B, C, D) of the section, and specify the orientation of the neutral axis. (25%)



2. Plot the shear force and bending moment diagrams for the beams shown in the figures. (15%)



3. Use the second-order differential equation of the deflection curve to derive the equations of the deflection for a simple beam AB loaded by a bending moment M_0 acting at right-hand support as shown in the figure. Also, determine the maximum deflection δ_{max} . (20%)



4. An element in plane stress is subject to stresses $\sigma_x = -81 MPa$, $\sigma_y = 129 MPa$, and $\tau_{xy} = -36 MPa$. Determine the principal stresses, the maximum shear stresses and show them on sketches of properly oriented stress elements. (20%)
5. Give the definition and explain briefly the following terminologies: (20%)
- (a) Poisson's ratio
 - (b) Section modulus
 - (c) Plastic modulus
 - (d) Core of a cross section