

淡江大學 107 學年度碩士班招生考試試題

7-1

系別：土木工程學系

科目：結構學(含工程力學)

考試日期：3月11日(星期日) 第1節

本試題共4大題， 1 頁

1. Please identify the zero-force members in each truss.

(a) (15%)

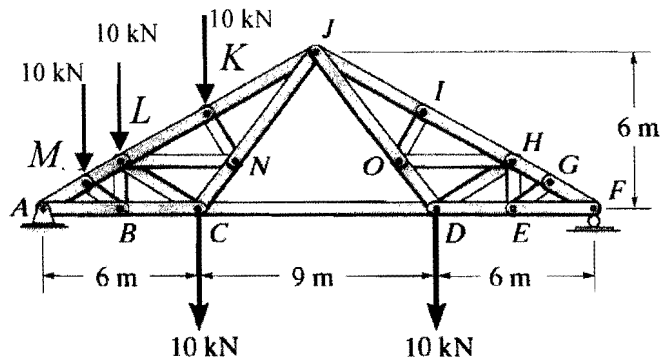


Fig. 1(a)

(b) (10%)

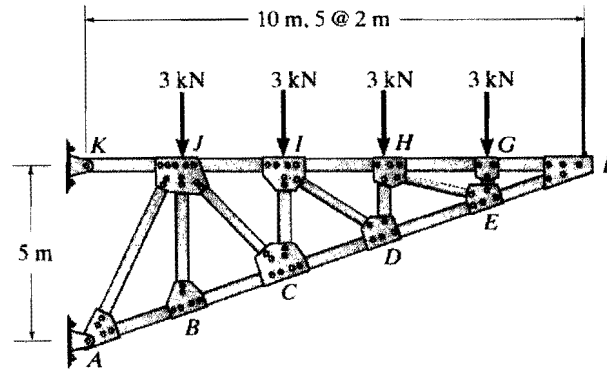


Fig. 1(b)

2. A beam supports the loads as shown in Fig 2(a). The cross section of the beam is a rectangular with width $b = 0.2\text{ m}$ and height $h = 0.3\text{ m}$ as shown in Fig. 2(b)

- (a) Please draw the shear and moment diagrams for the beam and provide the complete information of shear force and bending moment value in these two diagrams. (10%)
- (b) Please find the moment of inertia I_x of the beam's cross-sectional area about the x axis. (5%)
- (c) Please find the maximum tensile and compressive stresses in the beam. (10%)

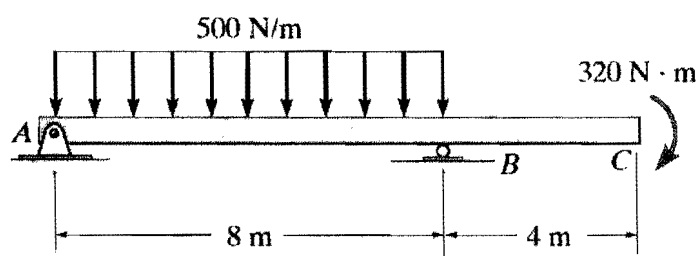


Fig. 2(a)

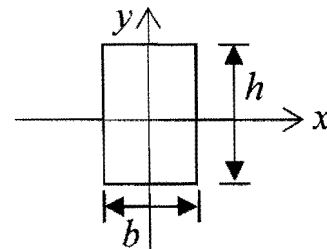


Fig. 2(b)

- 3. (a) Please draw the influence lines for the vertical reaction at A , the moment at A and the vertical reaction at C of the beam in Fig. 3. (15%)
- (b) If the live load is a uniformly distributed load of 2 kN/m , please find the maximum negative moment at A and the maximum positive reaction at C . (10%)

4. Please use the method of virtual work to determine the slope and displacement at point B as shown in Fig. 4. EI is constant. (25%)

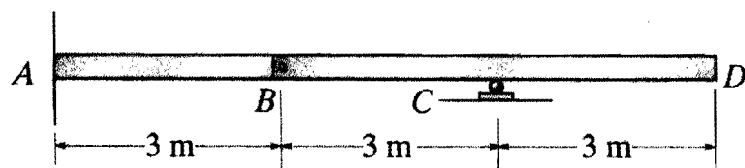


Fig. 3

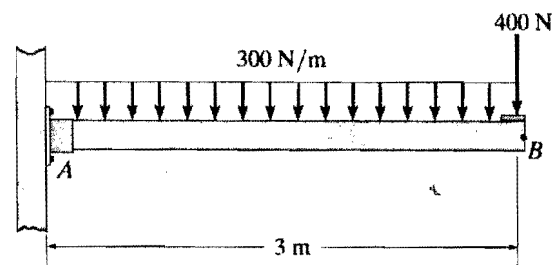


Fig. 4