系別：土木系工程設施組三年級　　　　科目：工程力學(含靜力學、材料力學)

考試日期：12月3日(星期六) 第1節　　　　本試題共 4 大題，1 頁

1. A simple-supported beam is subjected to the loadings as shown in Fig. 1. Draw the shear and bending moment diagrams of the beam. (Note: the maximum bending moment must be indicated.) (25%)
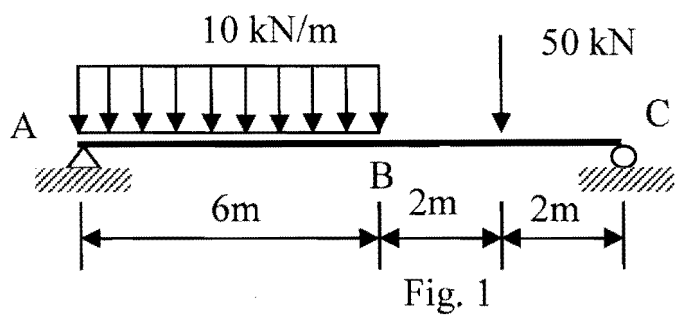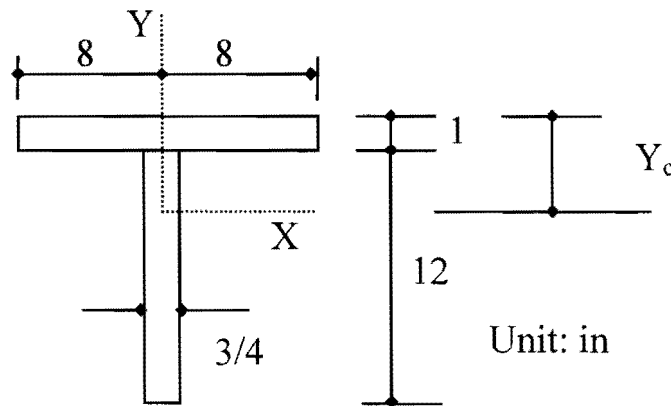

Fig. 1

Fig. 2

2. The dimensions of a plane area are shown in Fig. 2.
   (a) Determine the centroid of this area. (Calculate Y_c) (5%)
   (b) Calculate the moment inertia of this area with respect to the axes X and Y which pass through the centroid. (20%)

3. A simple-supported beam is subjected to a uniform load w. The cross section of the beam is rectangular and its dimensions are shown in Fig. 3. If the maximum allowable bending stress is 200 Mpa and the maximum allowable shear stress is 20 Mpa, find the maximum allowable load w. (unit: kN/m)(25%)
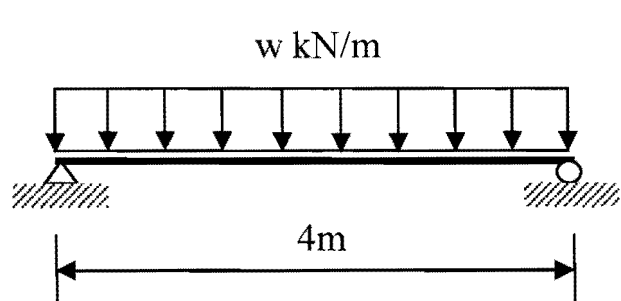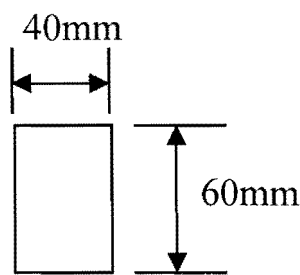

Fig. 3　　　　Dimensions of the cross section

4. A simply-supported beam is subjected to a triangularly distributed load as shown in Fig. 4. Derive the deflection curve and find the maximum vertical deflection. Assume EI=constant. (25%)
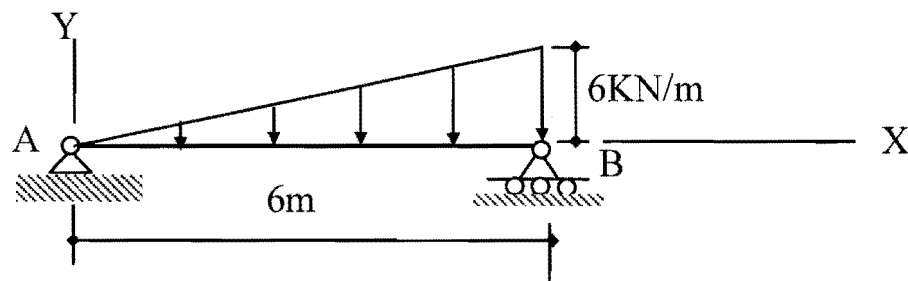

Fig. 4