

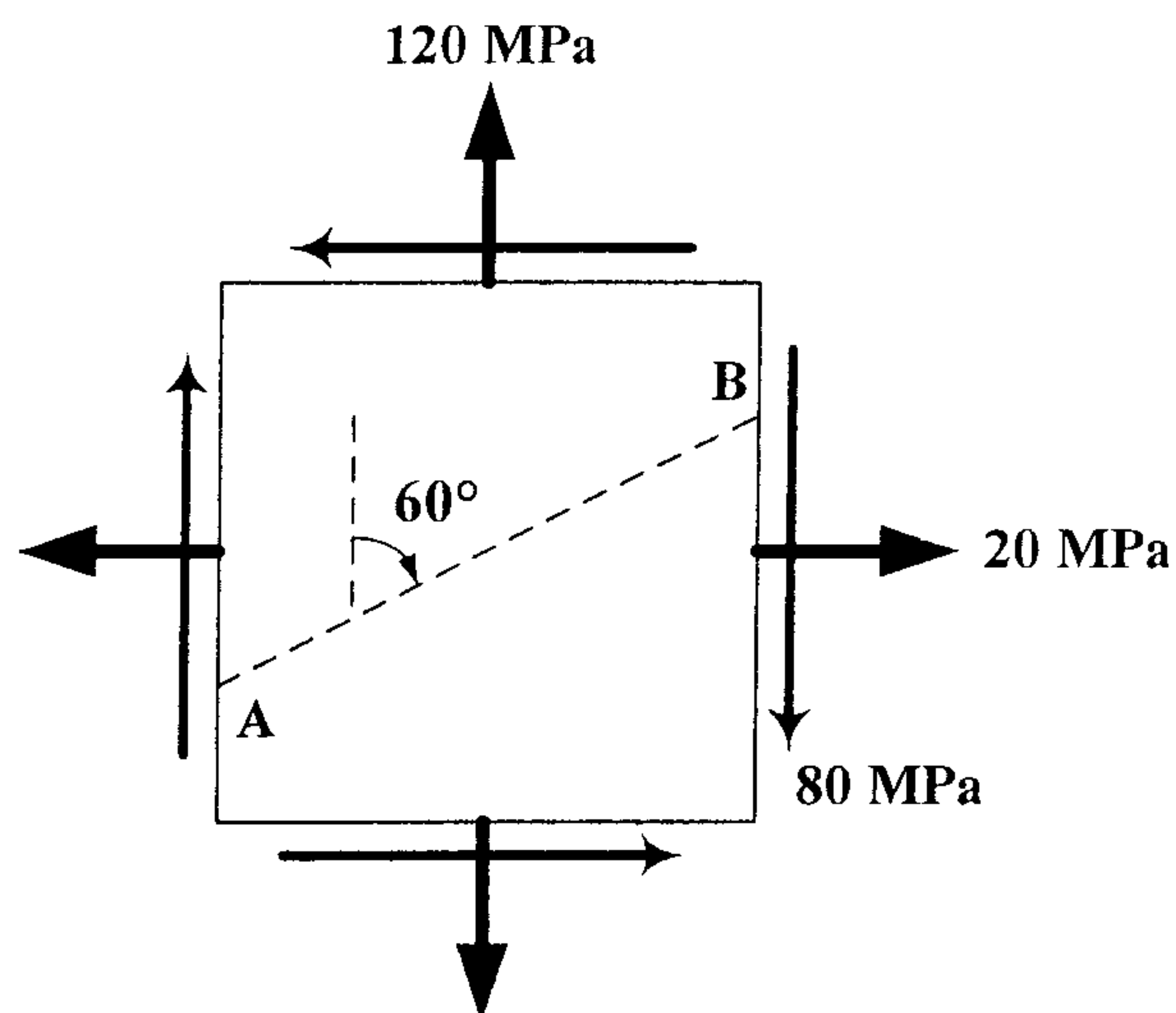
國立清華大學 101 學年度碩士班考試入學試題

系所班組別：工程與系統科學系碩士班 乙組

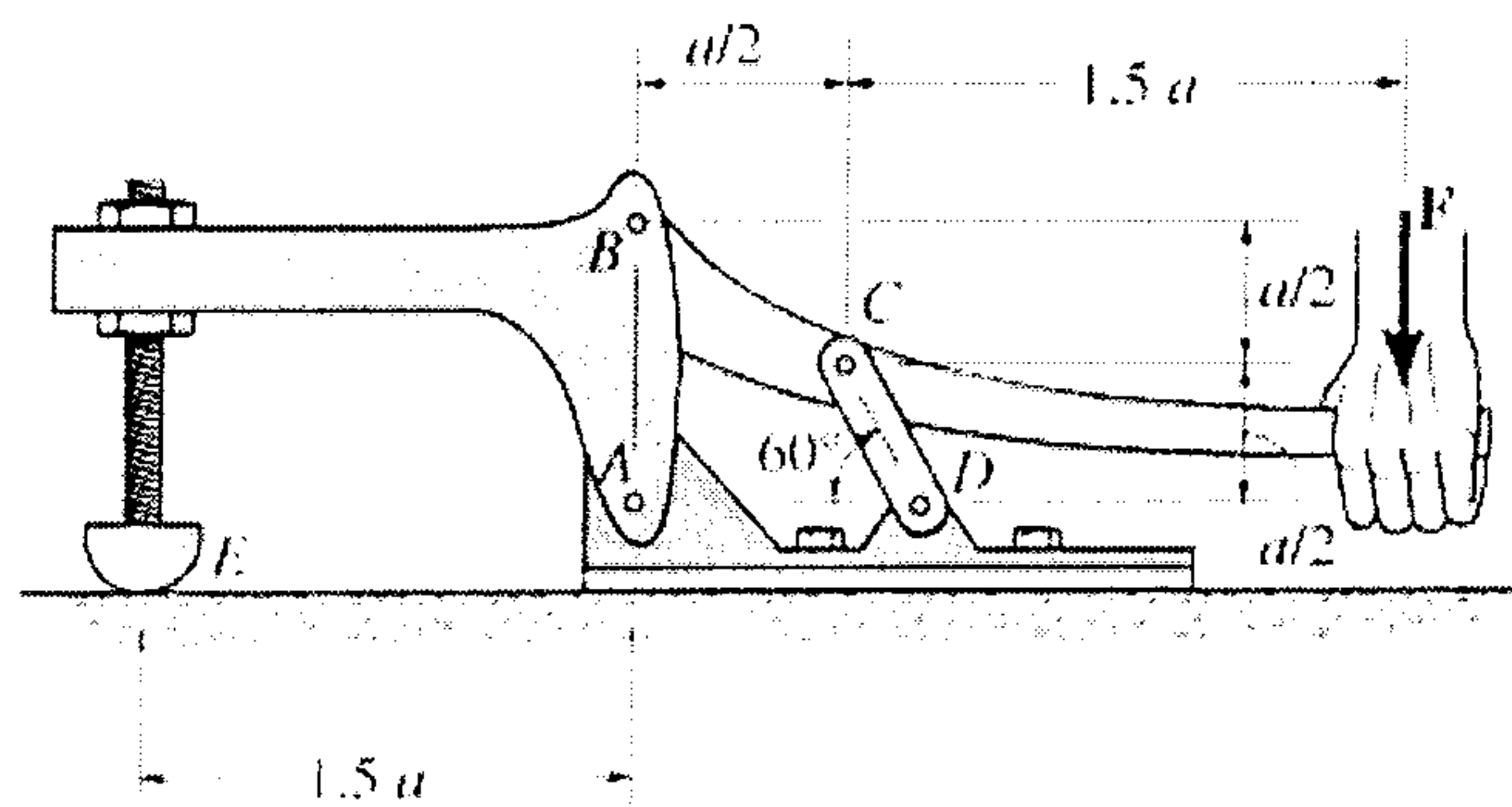
考試科目（代碼）：工程力學（含靜力學、材料力學）（2605）

共 3 頁，第 1 頁 \*請在【答案卷、卡】作答

1. At a point in a structural member subjected to plane stress, there are normal and shear stresses on horizontal and vertical planes through the point, as shown in the figure. Use Mohr's circle to determine
- The principle stresses and the maximum shear stress at the point. (12%)
  - The normal and shear stresses on the inclined plane AB. (8%)



2. The toggle clamp is subjected to a force  $F$  at the handle. Determine the vertical clamping force acting at E. (20%)



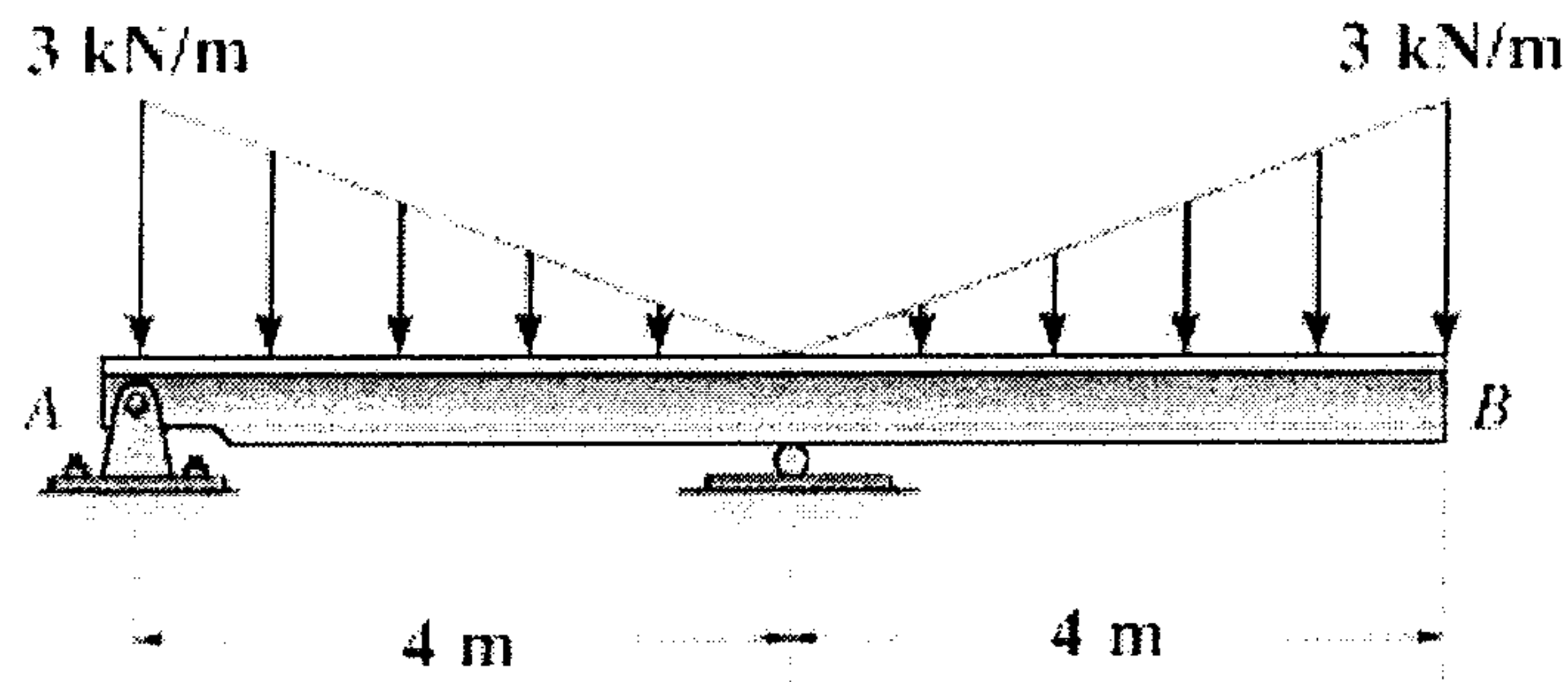
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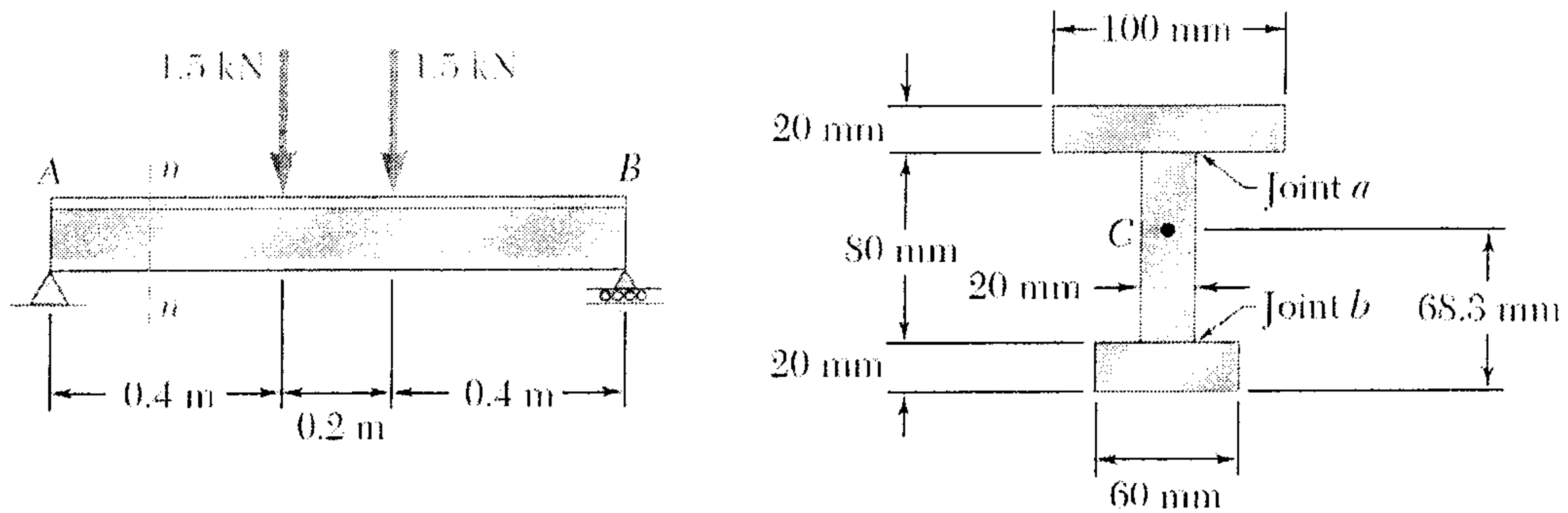
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共 3 頁，第 2 頁 \*請在【答案卷、卡】作答

3. Draw the shear and moment diagrams for the beam. (20%)



4. Beam AB is made of three planks glued together and is subjected, in its plane of symmetry, to the loading shown. Knowing that the width of each glued joint is 20 mm, determine the average shearing stress in each joint at section n-n of the beam. The location of the centroid of the section is given in the sketch and the centroidal moment of inertia is known to be  $I = 8.63 \times 10^{-6} \text{ m}^4$ . (20%)



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5. For the beam and loading shown, determine

a. The equation of the elastic curve. (10%)

b. The slope at end A. (5%)

c. The maximum deflection. (5%)

