

國立虎尾科技大學 106 學年度第一學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

第 1 頁 共 1 頁

科目：材料力學

注意事項：

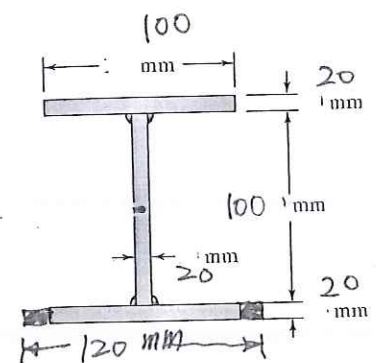
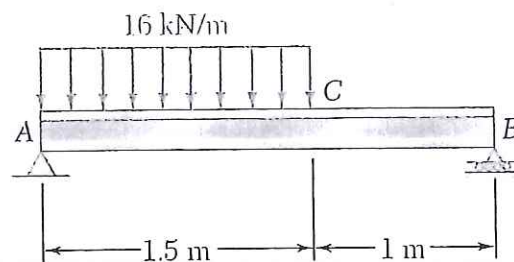
- (1) 本試題共有 3 題，合計一百分。
- (2) 可使用計算機，close book。

1. Explain the meanings of the following terminologies: (20%)

- (a) Yield stress;
- (b) Saint-Venant's principal;
- (c) Statically indeterminate;
- (d) Poisson's ratio;
- (e) Neutral axis;

2. For the beam and loading as shown: (45%)

- (a) Draw free body diagram and calculate the reaction forces;
- (b) Draw the normal, shear and bending-moment diagrams;
- (c) Find the location of maximum shear forces, determine and draw the distribution of stresses over the cross section area;
- (d) Find the location of maximum bending-moment, determine and draw the distribution of stresses over the cross section area.



3. The state of plane stress at a point is shown on the element as following: (35%)

- (a) Draw Mohr's circle for the state of stress;
- (b) Determine the principal stresses;
- (c) Determine the maximum in-plane shear stress;
- (d) Determine the stress components acting on the inclined plane AB;
- (e) Determine the absolute maximum shear stress;
- (f) Specify and sketch the orientation of the element in each case;

