

國立虎尾科技大學 109 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 2 頁

科目：材料力學

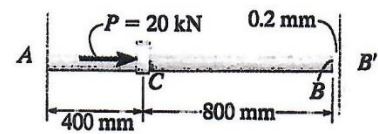
注意事項：

(1) 本試題共有 4 題，合計一百分。

(2) 可使用計算機，close book。

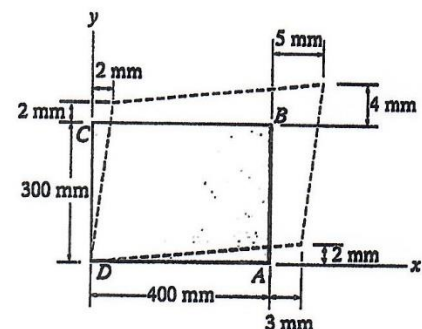
1. (30%)

The steel rod shown in Fig. 1 has a diameter of 10 mm. It is fixed to the wall at A, and before it is loaded, there is a gap of 0.2 mm between the wall at B' and the rod. Determine the reactions at A and B' if the rod is subjected to an axial force of $P = 20$ kN as shown. Neglect the size of the collar at C. Take $E_{st} = 200$ GPa.



2. (20%)

The piece of plastic is originally rectangular. Determine the average normal strain that occurs along the diagonals AC and DB.



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第 2 頁 共 2 頁

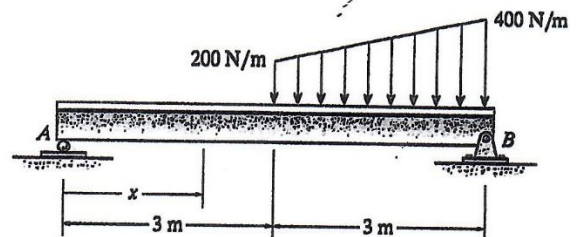
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3. (30%)

Draw the shear and moment diagrams for the beam and determine the shear and moment as functions of x .



4. (20%)

Using Mohr's circle, determine the normal stress and shear stress acting on the inclined plane AB . Sketch the result on the sectioned element.

