淡江大學97學年度碩士班招生考試試題

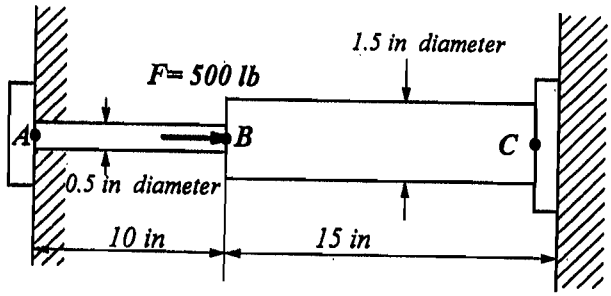
61-1

系別：機械與機電工程學系　　科目：材 料 力 學

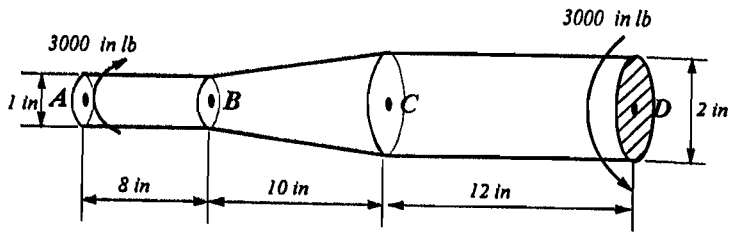
准帶項目請打「V」	
V	簡單型計算機

本試題共　　頁，　　大題

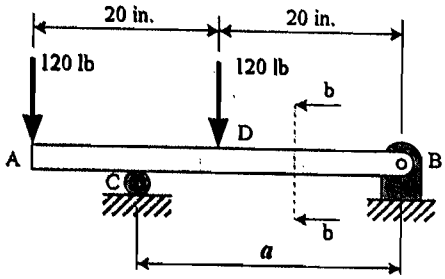
1. A step shaft is supported at each end by thrust bearing, as shown in figure below. A force, F= 500 lb, is applied at the step (point B) as shown. Determine the stress in each section of the shaft. The material is steel ($E=30\times10^6$ lb/in^2). (25%)

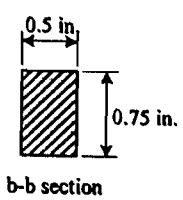


2. A step shaft (shown below) transmits a torque of 3000 lb-in. Determine the maximum shear stress and the relative angle of twist between surfaces located at point A and D ($E=30\times10^6$ lb/in^2, $\nu=0.3$) (25%)



3. Determine (a) the distance *a* for which the maximum absolute value of the bending moment in the beam is as small as possible, (b) the corresponding maximum normal stress due to bending. (Hint: Draw the bending-moment diagram and then equate the absolute values of the largest positive and negative bending moments obtained.) (25%)





b-b section

本試題雙面印製

61-2

淡江大學97學年度碩士班招生考試試題

61-2

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4. The steel pipe AB has a 102-mm outer diameter and a 6-mm wall thickness. Knowing that arm CD is rigidly attached to the pipe, determine the principal stresses and the maximum shearing stress at point K. (25%)