

國立高雄大學 104 學年度研究所碩士班招生考試試題

系所：

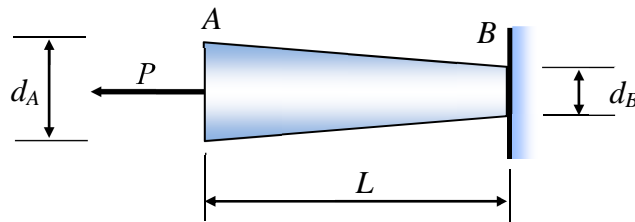
科目：材料力學
 考試時間：100 分鐘

土木與環境工程學系(土木工程
 組)

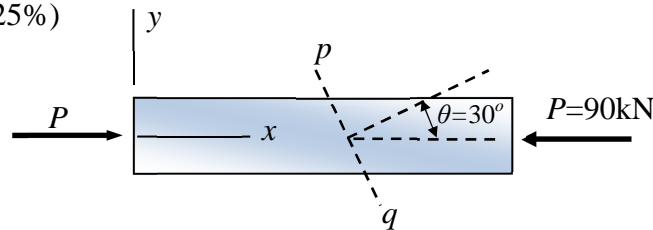
是否使用計算機：是

本科原始成績：100 分

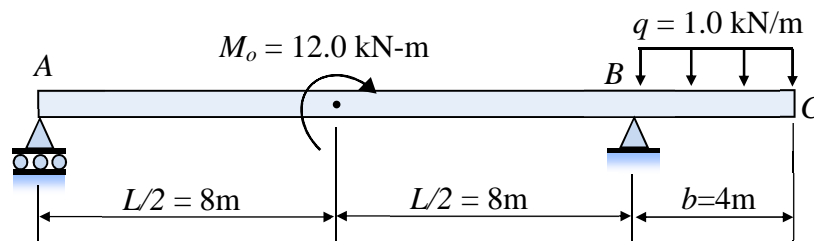
1. A tapered bar AB of solid circular cross section and length L is supported at end B and subjected to a tensile load P at the free end A . The diameters of the bar at ends A and B are d_A and d_B , respectively. Determine the elongation of the bar due to the load P , assuming that the angle of taper is small. (25%)



2. A prismatic bar having cross-sectional area $A = 1200 \text{ mm}^2$ is compressed by an axial load $P = 90 \text{ kN}$. Determine the stresses acting on an inclined section pq cut through the bar at an angle $\theta = 30^\circ$. (25%)



3. A beam ABC with an overhang at the right-hand end is shown in figure. The beam is subjected to a uniform load of intensity $q = 1.0 \text{ kN/m}$ on the overhang BC and a clockwise couple $M_o = 12.0 \text{ kN-m}$ acting midway between the supports at A and B . Draw the shear-force and bending-moment diagrams for the beam. (25%)



4. A cantilever beam AB supports a uniform load of intensity q acting over part of the span and a concentrated load P acting at the free end. Determine the deflection δ_B and angle of rotation θ_B at end B of the beam. (25%)

