

# 大葉大學九十一學年度轉學招生考試試題紙

系別	日\ 第二部	年級	考試科目 (中文名稱)	考試日期	節次	備註
機械工程學系	日\ 第二部	3	應用力學	7月23日	4	允許使用計算機

- [1] Determine the force in each member of the truss shown in Figure (1) and indicate whether the members are in tension or compression. (25 points)
- [2] Draw the shear and moment diagrams for the beam shown in Figure (2). (25 points)
- [3] The ram R shown in Figure (3) has a mass of 100 kg and is released from rest 0.75 m from the top of a spring, A, that has a stiffness  $k_A = 12 \text{ kN/m}$ . If a second spring B, having a stiffness  $k_B = 15 \text{ kN/m}$ , is "nested" in A, determine the maximum displacement of A needed to stop the downward motion of the ram. The unstretched length of each spring is indicated in the figure. Neglect the mass of the springs. (25 points)
- [4] The 10-kg rod shown in Figure (4) is constrained so that its ends move along the grooved slots. The rod is initially at rest when  $\theta = 0^\circ$ . If the slider block at B is acted upon by a horizontal force  $P = 50 \text{ N}$ , determine the angular velocity of the rod at the instant  $\theta = 45^\circ$ . Neglect friction and the mass of blocks A and B. (25 points)

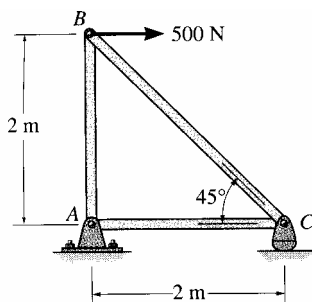


Figure (1)

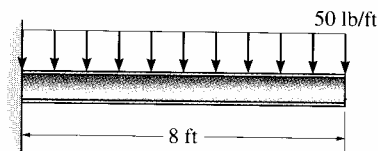


Figure (2)

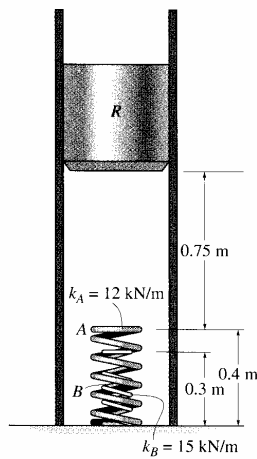


Figure (3)

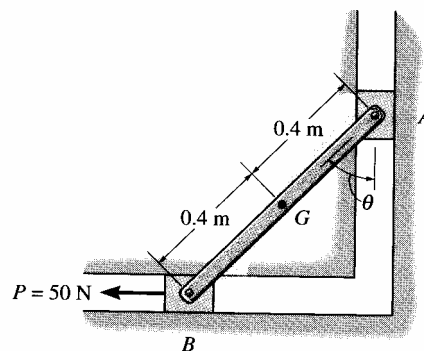


Figure (4)