淡江大學八十九學年度碩士班招生考試試題

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系別：運輸管理學系　　科目：力　學(動力學及靜力學)

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研究所考題(力學)

1. **Two wires are attached to the top of pole CD. It is known that the force exerted by the pole is vertical and that the 2500-N force applied to point C is horizontal. If the 2500-N force is parallel to the z axis ($\alpha = 90^0$), determine the tension in each cable.(see fig. 1)(20%)**

2. **The 23-kg plate ABCD measures 325 by 450 mm; it is held by hinges along edge AD and the wire BE. Determine the tension in the wire.(see fig.2) (20%)**

3. **A cylinder weighs 400 lb and is lifted by a pair of tongs as shown. Determine the forces exerted at D and C on the tong BCD.(see fig.3) (20%)**

4. **A 4-kg collar slides without friction along a rod which forms an angle of 30^0 with the vertical. The spring, of constant k = 150 N/m, is unstretched when the collar is at A. Determine the initial acceleration of the collar if it is released from rest at point B.(see fig.4) (20%)**

5. **A 600-mm rod rests on a smooth horizontal table. A force P applied as shown produces the following acceleration : $a_A = 0.8m/s^2$ to the right, $\alpha = 2rad/s^2$ clockwise as viewed from above. Determine the acceleration (a) of point B, (b) of point G.(see fig.5) (20%)**

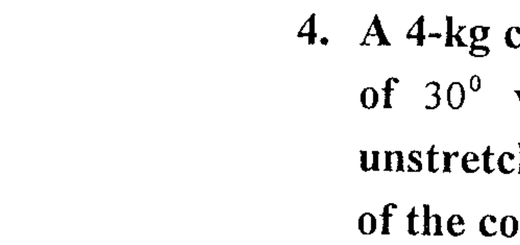

Fig. 1

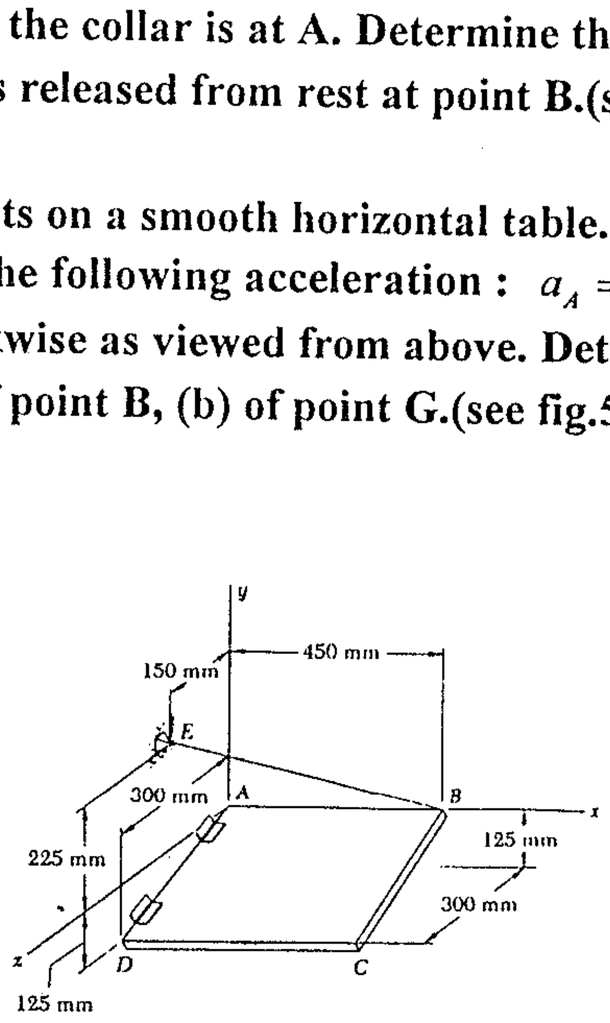

Fig. 2

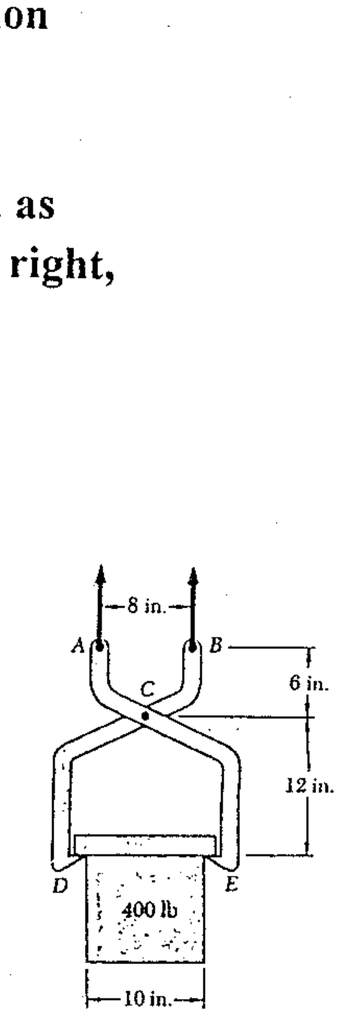

Fig. 3

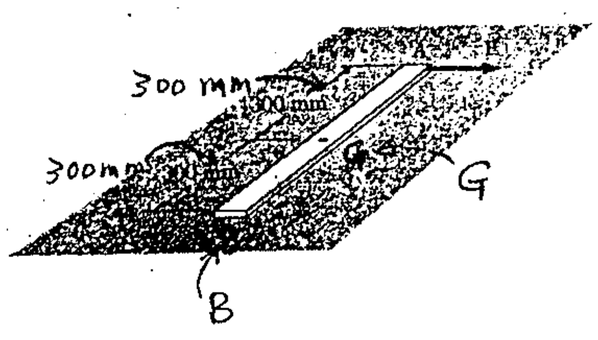

Fig. 5

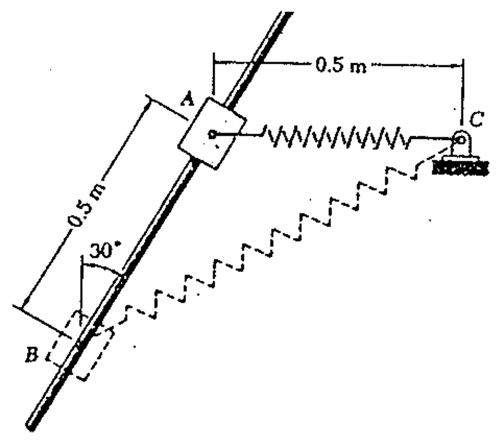

Fig. 4