

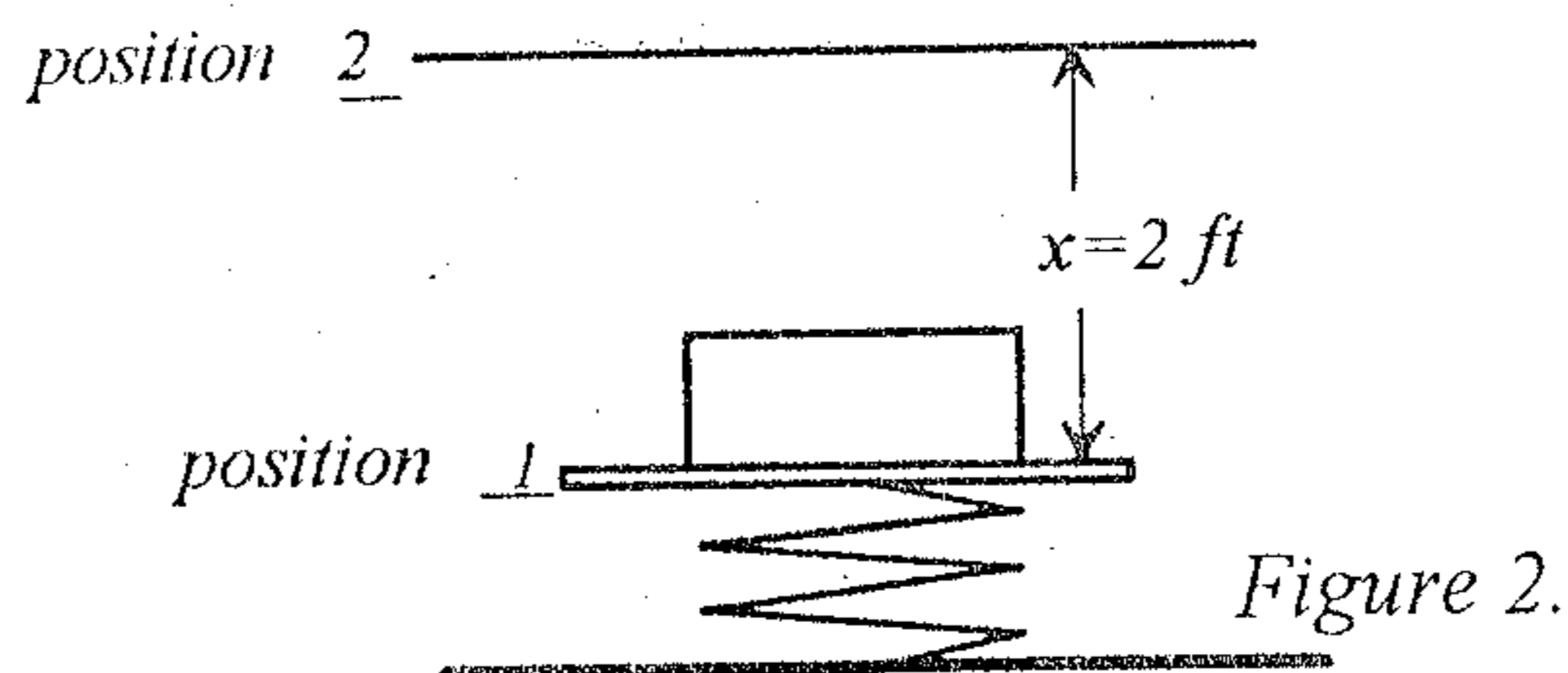
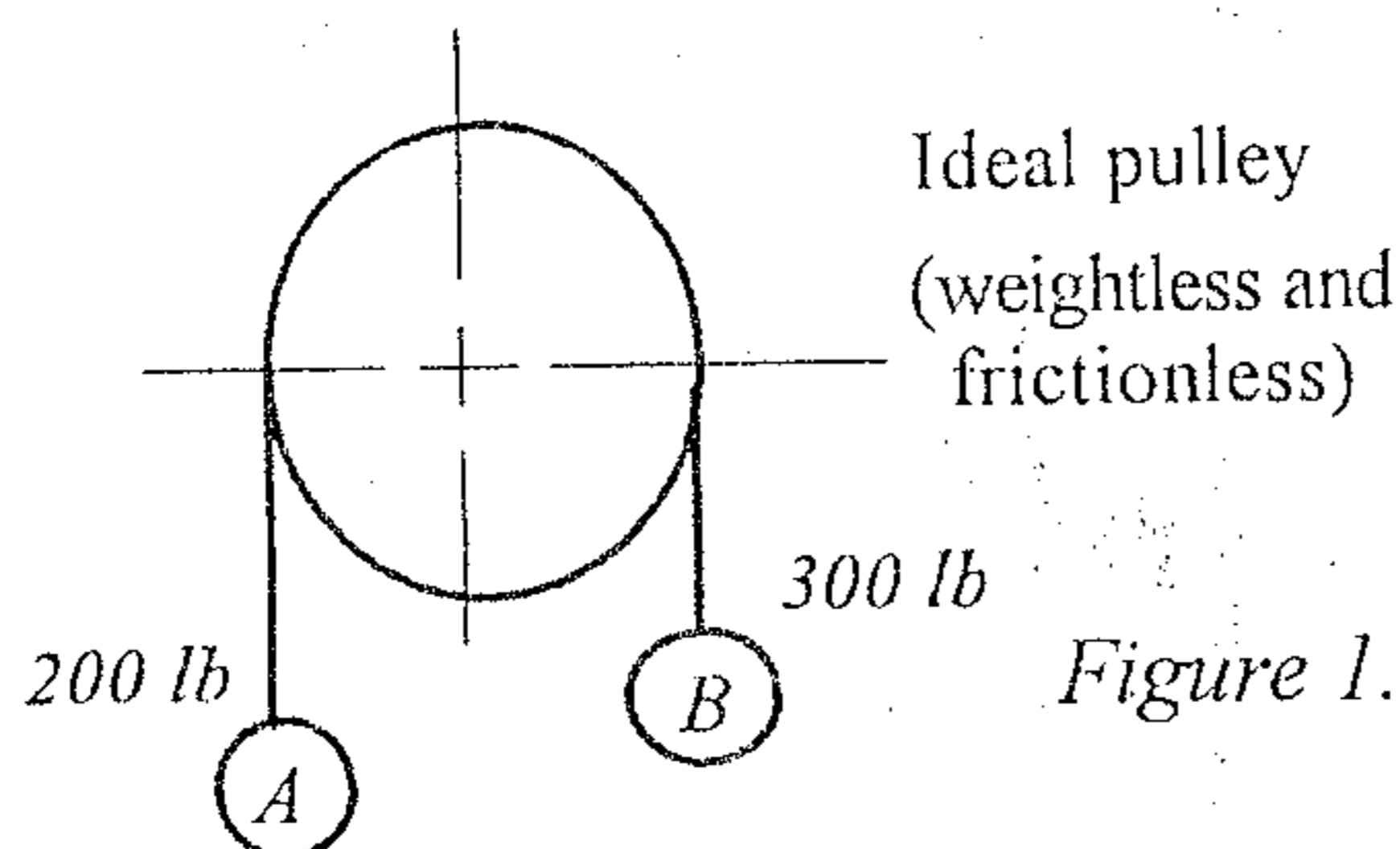
淡江大學八十八學年度碩士班招生考試試題

系別：航空及太空工程學系

科目：動力學

本試題共 / 頁

1. The system shown in *Figure 1* consists of two weights suspended from a cord that passes over a pulley. When it is released from rest, what will be the tension in the cord? (20%)



2. A 40 lb block rests on a flat plate as shown in *Figure 2*. The spring has a stiffness of $k=100\text{ lb/ft}$ and is initially compressed 2 ft from position 2 to 1. If the block is released from rest at position 1, determine its velocity when it reaches position 2. (20%)
3. A stone weighing 5 lbs is fastened to a string and is whirled (轉動) in a vertical circle of radius 2 feet .
- Find the minimum speed of the stone if the string is to stay taut (緊繃). (15%)
 - If the speed of the stone is 20 ft/sec , what tension must the string be able to withstand? (15%)
4. A bird of 5 lb is hit from behind by a bullet of 0.1 lb while it is flying with a velocity of 50 ft/sec as shown in *Figure 4*. Velocity of the bullet is 700 ft/sec and its direction forms an angle of 65° with the horizontal direction. After being hit, the bird falls to the ground in 2.3 seconds . Determine the distance from the point of hitting and the altitude the bird was flying at before it was hit. (30%)

