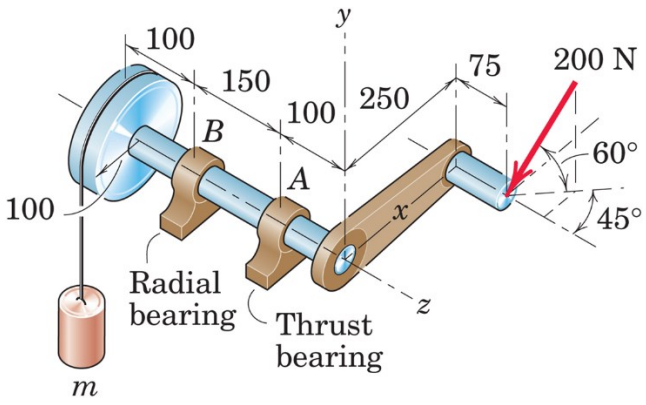
115 學年度秋季班機械工程學系機械產業碩士專班 筆試題目

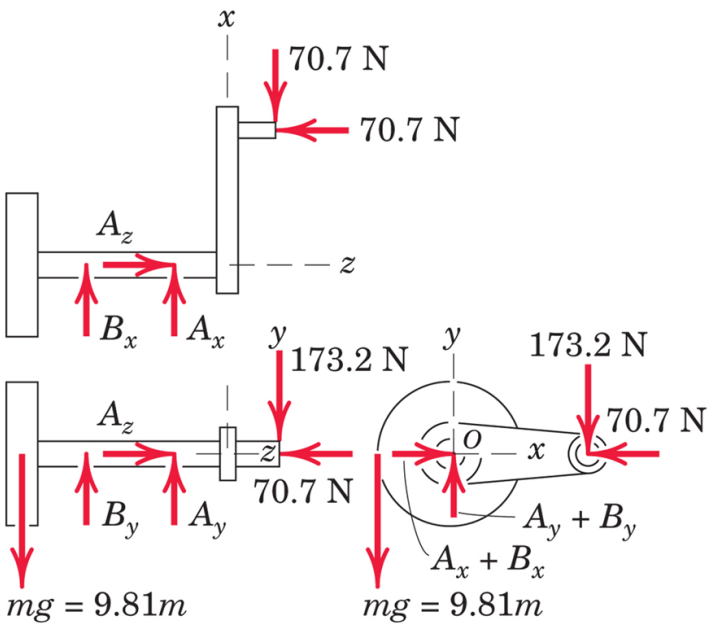
系所：機械工程學系　　考試科目：靜力學　　考試日期：0411　**第1頁，共 1 頁**

※ 考生請注意：本試題可使用計算機。請於答案卷作答，於本試題紙上作答者，不予計分。

1. A 200-N force is applied to the handle of the hoist in the direction shown. The bearing A supports the thrust (force in the direction of the shaft axis), while bearing B supports only radial load (load normal to the shaft axis). Determine the mass m which can be supported and the total radial force exerted on the shaft by each bearing. Assume neither bearing to be capable of supporting a moment about a line normal to the shaft axis. **(50%)**



Dimensions in millimeters



2．The machine shown is designed as an overload protection device that releases the load when it exceeds a predetermined value T. A soft metal shear pin S is inserted in a hole in the lower half and is acted on by the upper half. When the total force on the pin exceeds its strength, it will break. The two halves then rotate about A under the action of the tensions in BD and CD, as shown in the second sketch, and rollers E and F release the eye bolt. Determine the maximum allowable tension T if the pin S will shear when the total force on it is 800 N. Also, compute the corresponding force on the hinge pin A. **(50%)**