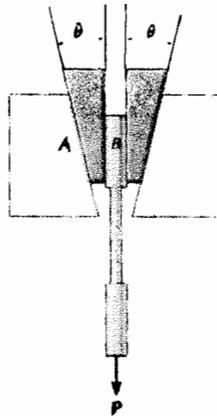
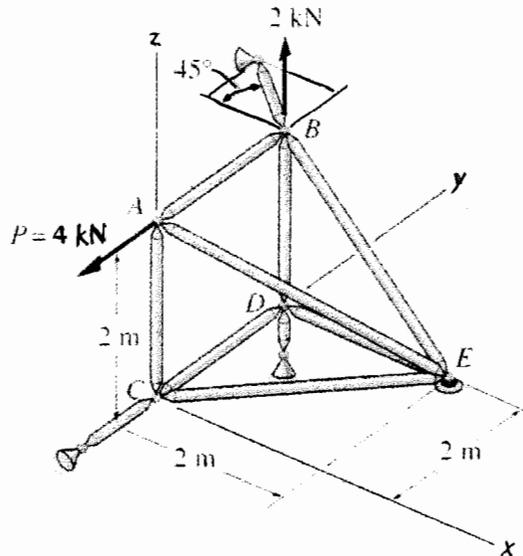


※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. (20 %) The wedge blocks are used to hold the specimen in a tension testing machine. Determine the design angle θ of the wedges so that the specimen will not slip regardless of the applied load. The coefficient of static friction are $\mu_A=0.1$ at A and $\mu_B = 0.6$ at B. Neglect the weight of the blocks.



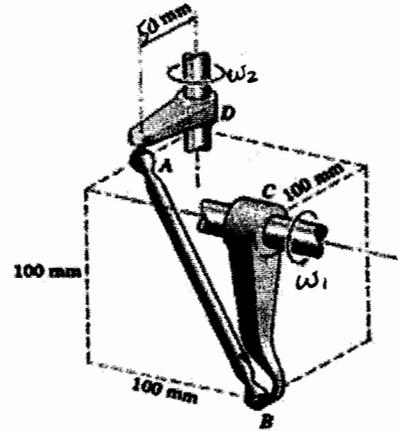
2. (20 %) Determine the forces acting in the members of the space truss shown in the following figure. Indicate whether the members are in tension or compression.



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

20% each

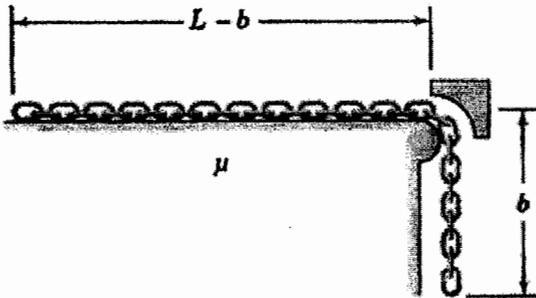
3. For the mechanism as shown, link AB has a ball-and-socket fitting on each end and connects crank DA with CB. Crank CB rotates about the horizontal axis with constant angular velocity 1 rad/s.



- (1) Determine the angular velocity of crank DA and link AB.
- (2) Determine the velocity of point E at the midpoint of link AB.

4. The chain is released from rest with the length b of overhanging links just sufficient to initiate motion. Consider the coefficients of static and kinetic friction between the links and the horizontal surface are the same value μ and neglect any friction at the corner.

- (1) Determine the velocity of the chain when the last link leaves the edge.
- (2) How much time does it take for the last link to leave the edge?



5. A uniform rod of weight W and length L is supported by a pin connection at A and a wire at B.

- (1) What is the force on pin A at the instant that the wire is released?
- (2) What is the force at A when the rod has rotated 45° ?
- (3) How much time does it take to reach 90° since its release?

