淡江大學八十八學年度日間部轉學生招生考試試題

系別：土木工程學系三年級　　科目：工程力學
（包括靜力學、材料力學）

本試題共 / 頁

1. A 10 kg uniform ladder 2.5 m long rests against a smooth wall as shown in Fig. 1. An 80 kg man climbs up the ladder to a point A, a distance L=2.0 m from the bottom of the ladder, before the ladder slips. What is the coefficient of friction between the ladder and the ground if the angle between the ladder and ground is 60° ? (25%)

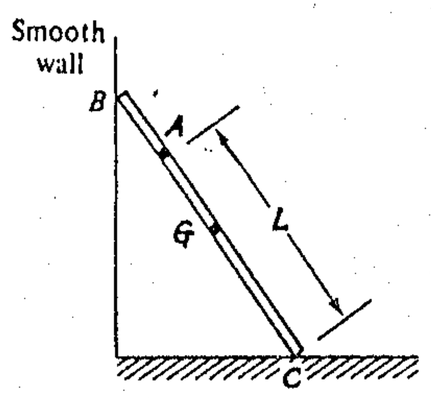

Fig. 1

2. Determine the components of the forces acting on each member of the pin-connected frames shown in Fig. 2. (25%)

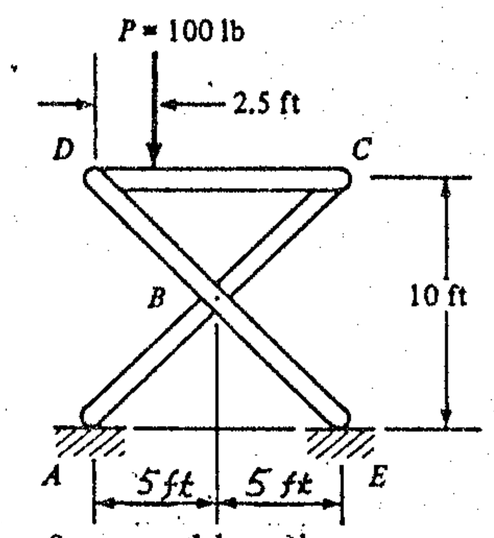

Fig. 2

3. For the beam shown in Fig. 3, find (a) the shear force and bending moment at x = 4 ft and x =10 ft (10%) (b) draw the shear diagram and moment diagram for the beam. (15%)

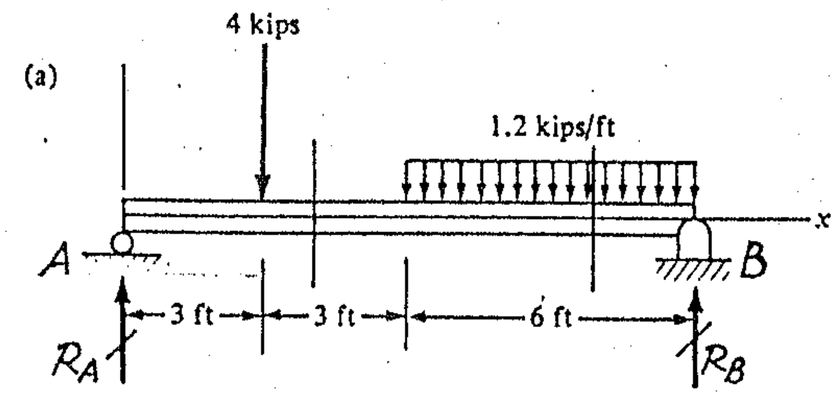

Fig. 3

4. The state of stress of an element is shown in Fig. 4(a). Use Mohr's circle to determine the stresses on planes forming angles of 30 degrees with the x and y axes as shown in Fig. 4(b). (25%)

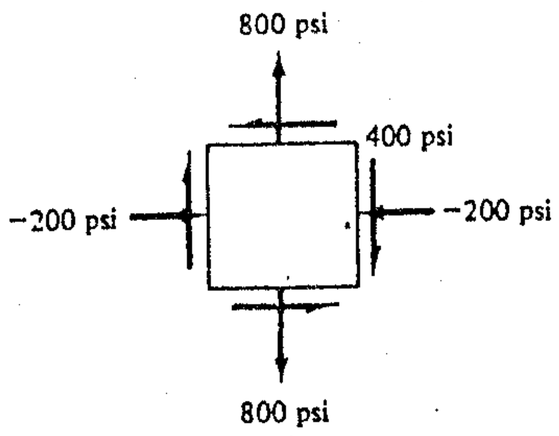

Fig. 4(a)

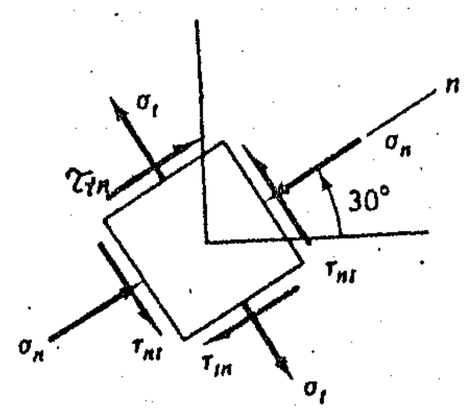

Fig. 4(b)

注意：箭頭方向僅為示意。