

1. A fixed crane has a mass of 1000 kg and is used to lift a 2400-kg crate as shown in Fig. 1. It is held in plane place by a pin at A and a rocker at B. The center of gravity of the crane is located at G. Determine the components of the reactions at A and B. (20%)
2. Determine the force in each member of the truss shown in Fig. 2. Indicate whether the members are in tension or compression. (20%)
3. Draw the shear and bending-moment diagrams and determine where the maximum moment occurs for the beam shown in Fig. 3. (20%)
4. The uniform sign shown in Fig.4 has a mass of 650 kg and is supported on the fixed column. Design codes indicate that the expected maximum uniform wind loading that will occur in the area where it is located is 900 Pa. Determine the internal force and moment at A. (20%)
5. The uniform 7-m steel shaft has a mass of 200kg and is supported by a ball-and-socket joint at A in the horizontal floor. The ball end B rests against the smooth vertical walls as shown in Fig. 5. Compute the forces exerted by the walls and the floor on the ends of the shaft. (20%)

Fig 1

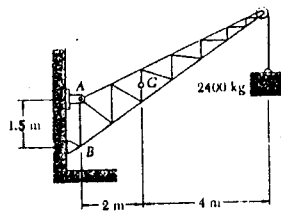


Fig 2

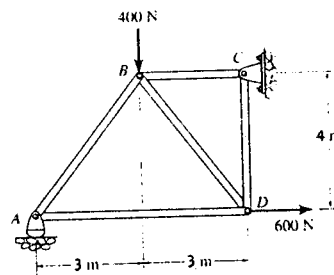


Fig 3

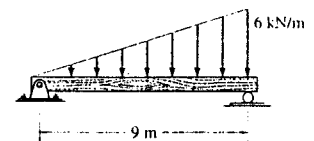


Fig 4

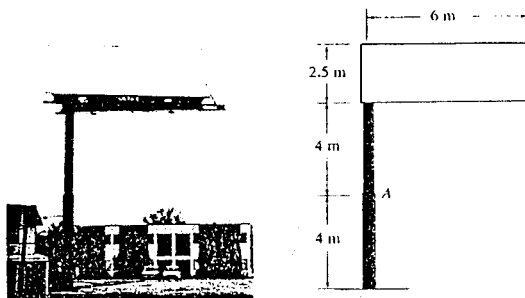


Fig 5

