

DIGITAL ASSIGNMENT-1

MOSF

1. A bar of cross section 850 mm^2 is acted upon by axial tensile forces of 120 kN applied at each end of the bar. Determine the normal and shearing stresses on a plane inclined at 30° to the direction of loading.
2. A plane element in a body is subject to a normal compressive stress in the x -direction of 60 MPa as well as a shearing stress of 40 MPa , as shown in Fig. 3-11. (a) Determine the normal and shearing stress intensities on a plane inclined at an angle of 30° to the normal stress. (b) Determine the maximum and minimum values of the normal stress that may exist on inclined planes and the direction of these stresses.

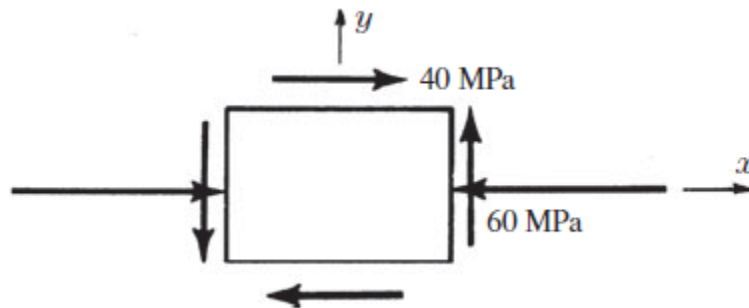


Fig.1

3. A steel bar of cross section 1000 mm^2 is acted upon by the forces shown in Fig.2. Determine the total elongation of the bar. For steel, consider $E = 200 \text{ GPa}$.

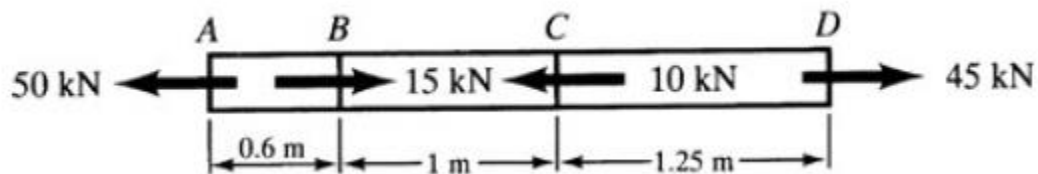


Fig.2