1. Write a note on Mohr's circle of stresses? How is it useful in solution of stress analysis problems?

2. Deduce the expression for the linear strain in a body in a direction inclined at angle θ with the x- axis when direct and shear strains along x and y direction are known?

3. A body is subjected to direct stresses in two mutually perpendicular direction accompanied by simple shear stress. Draw the Mohr's circle of stresses and explain how you will obtain the principal stresses and principal planes?

4. Draw the Mohr's stress circle for a biaxial stress system having two direct stresses of 30 MPa tensile and 20 MPa compressive. Determine the magnitude and direction of the resultant stresses on planes which makes angles of i) 25 degrees ii) 70 degrees with the 30 MPa stress. Also fine the normal and shear stresses on these planes

5. At a point in a steel bar the stresses on two mutually perpendicular planes are 10 MPa tensile and 5 MPa tensile whereas the shear stress across these planes is 2.5MPa. determine using Mohr's circle the normal as well as the shear stress on a plane making an angle of 30 degrees with the plane of the first stress also find the magnitude and the direction of resultant stress on the same plane?

6. A point in strained material is subjected to stresses shown in figure. Using Mohr's circle method determine the normal and tangential shear stresses across the oblique plane. Check the answer analytically?
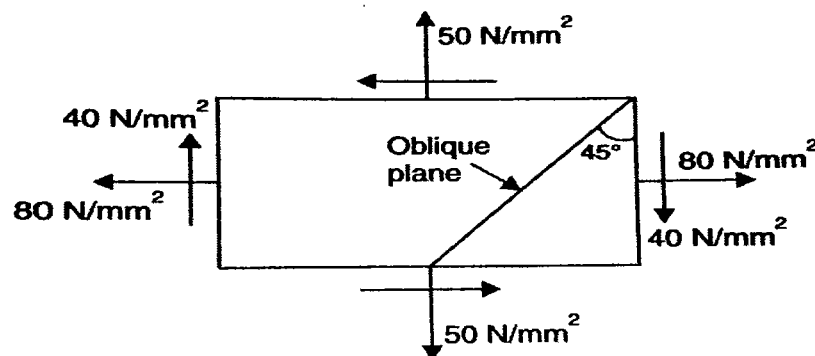
7. A strained material is subjected to two dimensional stresses. Prove that the sum of the normal components of stresses on any two mutually perpendicular plane is constant?