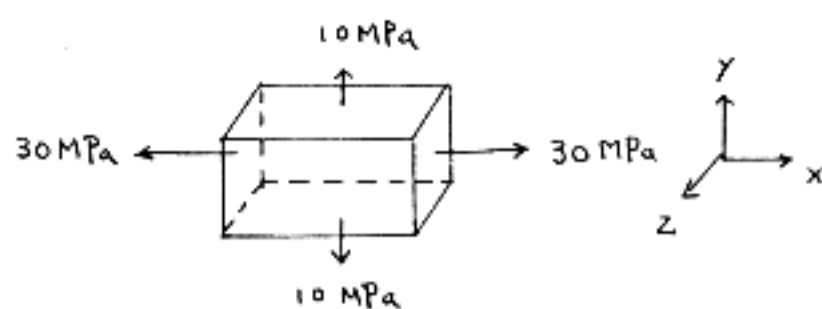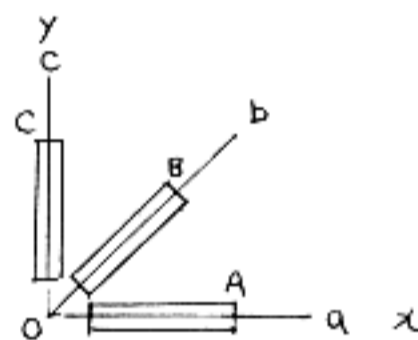1. A steel block is subjected to the following stress state as shown.
(a) Draw the Mohr circle to express the stress state, (b) draw the maximum shear stress plane in the block, and (c) calculate this maximum shear stress.
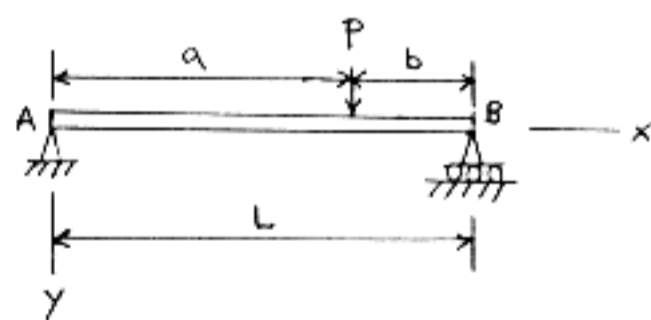

2. 定義何謂 plane-stress 及 plane-strain stress states, 並且各舉一實例說明.

3. 右圖有一材料之表面之貼有 Strain rosette。其 a、b、c 三個方向之 strain 分別為 $\varepsilon_a = 1 \times 10^{-4}$ cm/cm, $\varepsilon_b = 0.6 \times 10^{-4}$ cm/cm, $\varepsilon_c = 0.3 \times 10^{-4}$ cm/cm. 此材料之 E 為 70,000 MPa $\nu = 0.3$. 試求此材料所受之 principle stress 及其 principle direction. Note: $\angle aob = \angle boc = 45°$.

4. Calculate the maximum deflection (v_{max}) for a beam AB supporting a concentrated load(P), as shown in the figure. The Young's modulus and the moment of inertia of the area about the neutral axis are E and I, respectively.

以上共 4 題，每題 25%.