

- The diameter of the pulley in Fig.1 is 500 mm. Find the reactions at pivot D and E. (15%)
[註] 鋼索與滑輪均不考慮磨擦係數，磨擦係數 $\mu=0.2$ 只產生在枱車下滑之傾斜面。
- In Fig.2, determine the smallest coefficient of friction between the inclines and the blocks which will prevent the blocks from moving. (15%)
- In Fig.3, rod has a diameter of 40 mm. A horizontal force P of magnitude 1000 N is applied to the end E of lever ABCDE. Determine:
 - the normal and shear stresses on an element located at point H and having sides parallel to the x and y axes. (15%)
 - the principal planes and the principal stresses at point H. (10%)

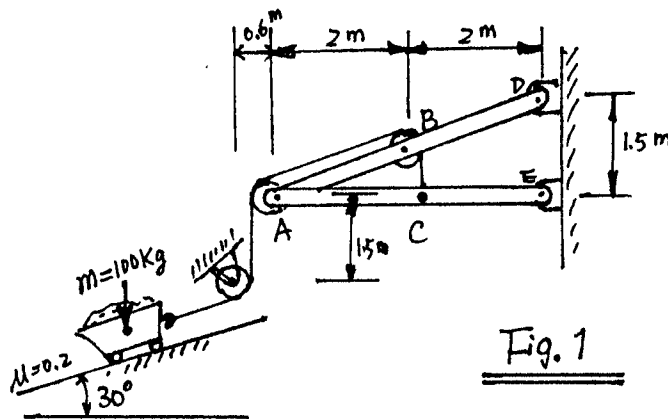


Fig. 1

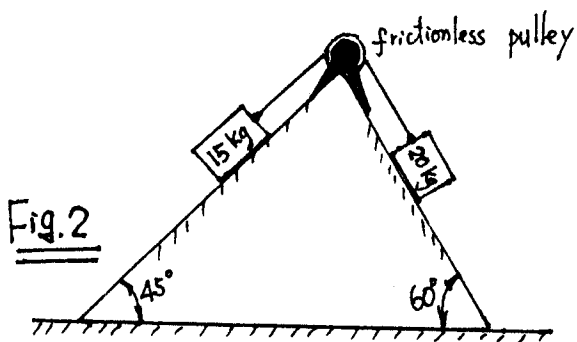


Fig. 2

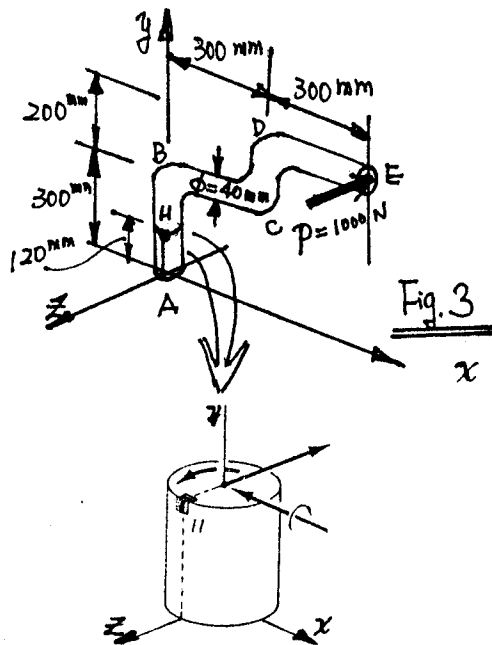


Fig. 3

(背面仍有題目,請繼續作答)

4. A strain gauge (45°, strain rosette) was shown in Fig.4. The experimental results were given as follows:

gauge A = 530 μm ; gauge B = 420 μm ; gauge C = -80 μm .

Find the principal strain and the principal shear strain. (20%)

5. In Fig.5, the wheel (80 kg weight, 200 mm radius) has a radius of gyration of $k_o=125$ mm and is rotating at 40 rad/s. P is 400 N. The friction coefficient at B is $\mu=0.35$. Determine:

- (a). the total number of revolutions the wheel makes before it stops. (15%)
 (b). what are the horizontal and vertical components of reaction at A while the wheel is stopping. (10%)

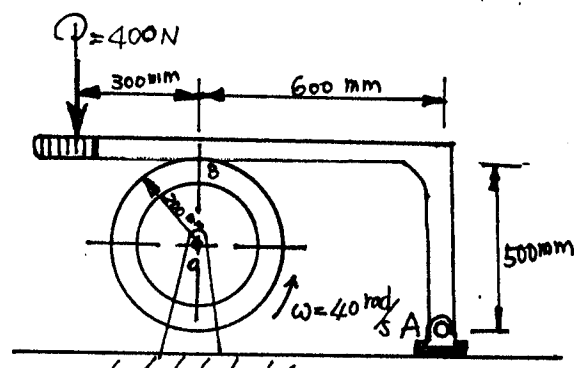
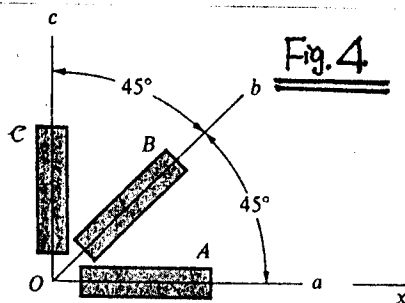


Fig. 5