SOLUTION

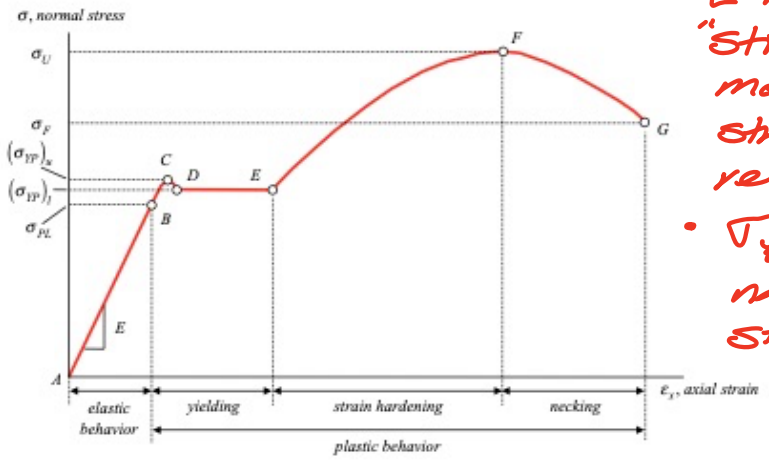
Online Quiz01

ME 323 – Summer 2024

Provide your responses to Quiz01 on Gradescope.

Question Q1

The stress vs. strain curve for a material is shown below.

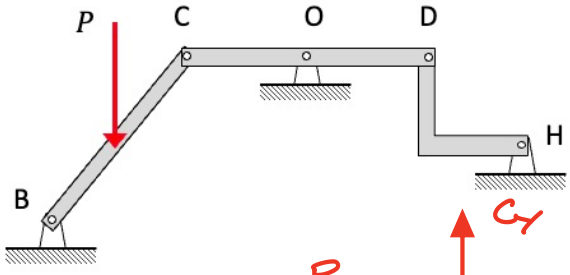


- E represents the "stiffness" of the material for small strains and is not related the "strength".
- σ_Y, σ_U and σ_Y are measures of strength

TRUE or *FALSE*: The larger the value of the Young's modulus *E*, the *stronger* the material.

Question Q2

Consider the structure shown below.

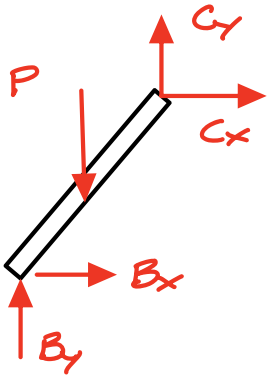


Q2.1

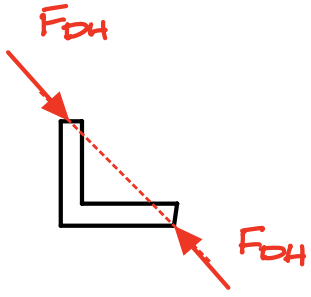
TRUE or *FALSE*: BC is a two-force member.

Q2.2

TRUE or *FALSE*: DH is a two-force member.



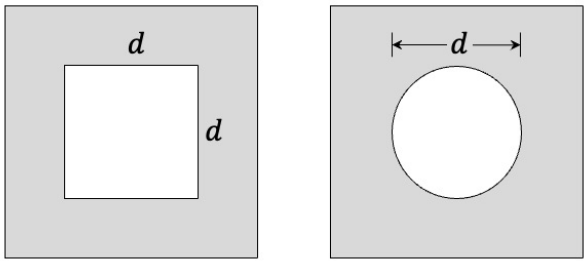
BC has forces acting at 3 points. Is not a two-force member.



Forces acting at two points. A two-force member

Question Q3

A square hole of dimensions $d \times d$ is to be punched into a piece of sheet metal of thickness *t*. A circular hole of diameter *d* is to be punched into an identical piece of sheet metal of thickness *t*. Let P_A and P_B be the minimum punching forces required for the square and circular holes, respectively.



A - square hole B - circular hole

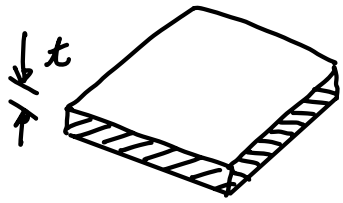
Choose the correct response below.

a) $P_A > P_B$ since $4 > \pi$

b) $P_A = P_B$

c) $P_A < P_B$

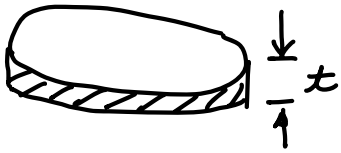
d) More information is needed in order to answer.



$A = 4dt$

$P_A = A\tau$

$= (4dt)\tau$



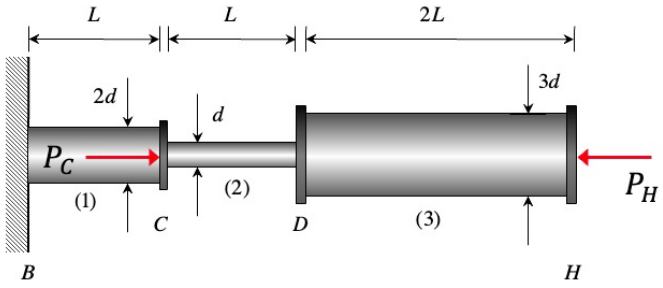
$A = \pi dt$

$P_B = A\tau$

$= (\pi dt)\tau$

Question Q4

Consider the rod structure shown with axial loads of P_C and P_H acting on connectors C and H. All members of the rod have a solid circular cross-section. Let $|F_2|$ and $|F_3|$ be the magnitudes of the forces that are carried by members (2) and (3) of the rod, respectively.



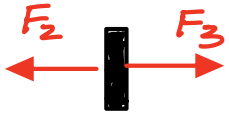
Choose the correct response below.

a) $|F_2| > |F_3|$

b) $|F_2| = |F_3|$

c) $|F_2| < |F_3|$

d) More information is needed in order to answer.



$\Sigma F = -F_2 + F_3 = 0$

$\hookrightarrow |F_2| = |F_3|$