Menoufiya University
Faculty Of Engineering Shebin El-kom
Prod Engineering & Mech. Design Deep
Final second Term Exam. 2017-2018
Date 26/5/2018

Minufiya University

Subject: stress analysis
Code: PRE512
Level: 500
Time Allowed : 3 Hours

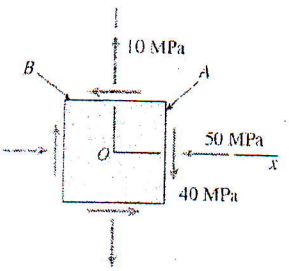
Answer all the following questions

OUSTION (1)

- $\sigma_x = -50$ MPa $\sigma_y = 10$ MPa
  $\tau_{xy} = -40$ MPa $\theta = 30^\circ$

a) Determine σ_{x1} , τ_{x1y1} on $\theta = 45^\circ$

b) Determine σ_1 , σ_2 , and τ_{max}



OUSTION (2)

- In the flat thin steel plate which is loaded in the x-y plane , it is known that $\sigma_x = 140$ MPa , $\tau_{xy} = 40$ MPa , $\varepsilon_z = -0.00036$. what is the value of τ_{max} ?
  (Take E = 200 GPa and $\mu = .33$)

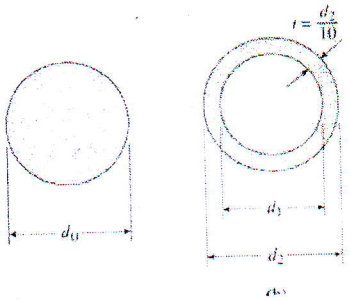
OUSTION (3)

- A steel shaft of either solid bar or circular tube
  T= 1200 N.m $\tau_{all} = 40$ MPa
  $\theta = 0.75^\circ$ / m G = 78 GPa

a) Determine d_o of the solid bar

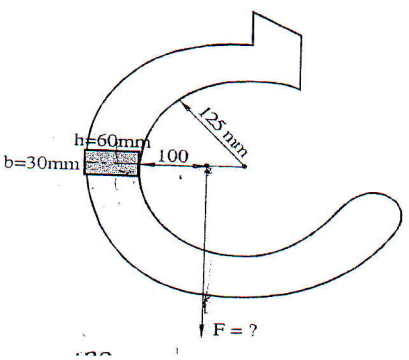
b) For the hollow shaft , $t = d_2 / 10$, Determine d_2 .

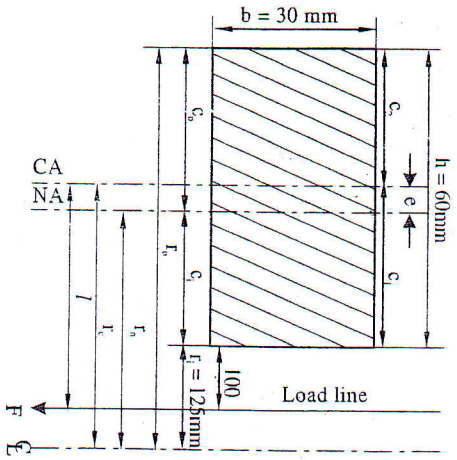
c) Determine d_2 / d_o , W_{hollow} / W_{solid}



OUSTION (4)

- The section of a crane hook in shape whose width is 30 mm and depth is 60 mm . The centre of curvature of the section is at distance of 125 mm from the inside section and the load line is 100 mm from the same point . Find the capacity of hook if the allowable stress in tension is 75 N/mm^2





Field	National Academic Reference Standard(NARS			
	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
Program Academic Standards that the course contribute in achieving	A2,A5	B3,B17	C2,C3	
Question No.	1,2	4	3	