


Kafrelsheikh University		Prof. Montasser Dewidar
Faculty of Engineering		No. of Pages : 1
Department of Mechanical Eng.		Date of Exam : 31 - 12 - 2016
Course Name : Stress Analysis		Time Allowed : 3 Hours
Course Code: : MDP 2109		Full Mark : 30 Degree
Level : 2		

Answer the following questions.

Question No. 1 Mark 20 This question identify ILOs a, b,c, and d

1-Two forces P_1 and P_2 , of magnitude $P_1 = 16$ kN and $P_2 = 20$ kN, are applied as shown to the end A of bar AB, which is welded to a cylindrical member BD of radius $c = 20$ mm (Fig. 1). Knowing that the distance from A to the axis of member BD is $a = 50$ mm and assuming that all stresses remain below the proportional limit of the material, evaluate (a) the normal and shearing stresses at point K of the transverse section of member BD located at a distance $b = 60$ mm from end B, (b) the principal axes and principal stresses at K, (c) the maximum shearing stress at K.

Question No. 2 Mark 10. This question identify ILOs a, b,c, and d

2-The rigid bar BDE (Fig. 2) is supported by two links AB and CD. Link AB is made of aluminum ($E = 69$ GPa) and has a cross-sectional area of 550 mm²; link CD is made of steel ($E = 205$ GPa) and has a cross-sectional area of 650 mm². For the 40-kN force shown, determine the deflection (a) of B, (b) of D, (c) of E.

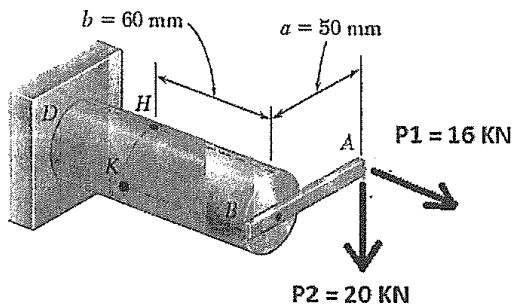


Fig. 1

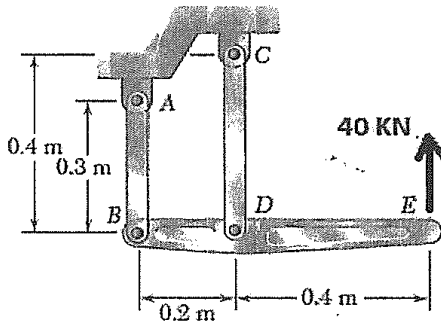


Fig. 2

“Good Luck”

Examining Committee

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