1. Given rotating axle is under the effect of $F_1$ and $F_2$ forces. Axle material is Fe50. The surface quality is grinding and factor of safety is 2.

Given: $F_1=46000$ N, $F_2=42000$ N, $L=380$ mm, $L_1=510$ mm, $L_2=110$ mm, $l_1=50$ mm, $l_2=130$ mm, $l_3=190$ mm, $l_4=30$ mm, $l_A=60$ mm, $d_1=d_4=80$ mm, $d_2=d_3=100$ mm, $d_5=120$ mm, $r_1=r_3=3.5$ mm and $r_2=4$ mm dir.

a) Find out A and B support reactions.
b) Find out the bending stresses in sections 1-1 and 2-2
c) Which section is the most critical? Find out the stresses in this section and control it in terms of strength consideration.