1) The assembly consists of three disks $A$, $B$, and $C$ that are used to support the load of 140 kN. Determine the smallest diameter $d_1$ of the top disk, the largest diameter $d_2$ of the opening, and the largest diameter $d_3$ of the hole in the bottom disk. The allowable bearing stress for the material is $(\sigma_b)_{\text{allow}} = 350 \text{ MPa}$ and allowable shear stress is $(\tau)_{\text{allow}} = 125 \text{ MPa}$. 

![Diagram of the assembly with labeled diameters and dimensions.](image-url)
The compound wooden beam is connected together by a bolt at B. Assuming that the connections at A, B, C, and D exert only vertical forces on the beam, determine the required diameter of the bolt at B and the required outer diameter of its washers if the allowable tensile stress for the bolt is \((\sigma_t)_{allow} = 150\) MPa and the allowable bearing stress for the wood is \((\sigma_b)_{allow} = 28\) MPa. Assume that the hole in the washers has the same diameter as the bolt.