***Homework H34.A***

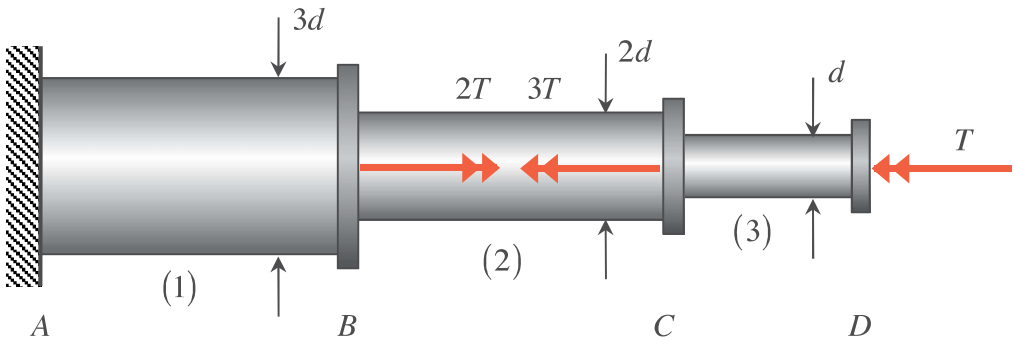
***Given***: A circular cross-sectioned shaft is made up of solid shaft components (1), (2) and (3), having diameters of $3d$, $2d$ and $d$, respectively. (1) and (2) are joined with the rigid connector B, (2) and (3) are joined by rigid connector C and (1) is attached to a fixed wall at its left end. A rigid connector is attached to the right end of (3). Torques $2T$, $3T$ and $T$ act on connectors B, C and D, as shown.

***Find***: For this problem:

a) Determine the torque load on each of the components as a result of the applied torques.

b) What is the maximum shear stress in the shaft? At what location(s) does this maximum stress exist?

Leave your answers in terms of $T$ and $d$.



***Homework H34.B***

***Given***: Circular cross-sectioned shafts (1) and (2) are coupled through a pair of meshing gears B and C, where $r_B > r_C$. End D of shaft (2) is connected to a fixed wall, whereas a torque of T is applied to end A of shaft (1). Both shafts have solid cross sections with a diameter of *d*.

***Find***: For this problem, determine the maximum shear stress in the system. In which shaft does this maximum shear stress occur, and where on the cross section does it occur?

Express your answers in terms of the parameters defined in the figure.