Remarks: See §5.4.2 example 1, pages 322 till 335

Answer:

c.
$$\tau_{\text{max}} = 3 \text{ N/mm}^2$$

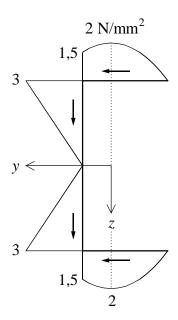
Explanation:

- a. $I_{yy} = 2(I_{\text{flange;centr}} + I_{\text{flange;steiner}}) + I_{\text{web;steiner}} = 18 \times 10^6 \text{ mm}^4$ $I_{\text{web;centr}} \approx 0$ and is negligible.
- c. The shear stress distribution in the flanges is parabolic. Maximum shear stress is at y = 0 and above the normal centre NC:

$$\tau_{\text{max;flens}} = \left| \frac{V_y S_y^a}{b^a I_{yy}} \right| = \frac{(7200 \text{ N})(80 \times 10^3 \text{ mm}^3)}{(16 \text{ mm})(18 \times 10^6)} = 2 \text{ N/mm}^2$$

The shear stress in the web varies linearly, and is maximum at the junction

$$\tau_{\text{max;web}} = \left| \frac{V_y S_y^a}{b^a I_{yy}} \right| = \frac{(7200 \text{ N})(60 \times 10^3 \text{ mm}^3)}{(8 \text{ mm})(18 \times 10^6)} = 3 \text{ N/mm}^2$$



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