Remarks: See example 2, pages 335 till 338

Answer:

b. $\tau_{\max} = 30 \text{ N/mm}^2$

Explanation:

Location of the normal centre:
On the symmetric axis, $50\sqrt{2}$ mm left from the corner.

Work in *y*-*z*-co-ordinates with the *y*-axis along the symmetric axis.

Cross-sectional properties:
$I_{yy} = 8\times10^6 \text{ mm}^4$ and $S_y^{\text{a}} = 60\sqrt{2}\times10^3 \text{ mm}^3$

The shear stress is maximum in the steel sections lying of the vertical lines going through the normal-centre

$$\tau_{\max} = \left|\frac{V_y S_y^{\text{a}}}{b^{\text{a}} I_{yy}}\right| = \frac{(48\sqrt{2}\times10^3 \text{ N})(60\sqrt{2}\times10^3 \text{ mm}^3)}{(12 \text{ mm})(8\times10^6 \text{ mm}^4)} = 30 \text{ N/mm}^2$$