Remarks: See §3.2.4, example 7, pages 114 till 115

Answers 3.26-1:

a. $I_{yy} = 2,083 \times 10^9$ mm^4; this is not a principal value
b. $I_{zz} = 3,333 \times 10^9$ mm^4; this is not a principal value
c. $I_{yz} = 1,5 \times 10^9$ mm^4

Answers 3.26-2:

a. $I_{yy} = 52,2 \times 10^6$ mm^4; this is a principal value
b. $I_{zz} = 325 \times 10^6$ mm^4; this is a principal value
c. $I_{yz} = 0$

Answers 3.26-3:

a. $I_{yy} = 110 \times 10^3$ mm^4; this is a principal value
b. $I_{zz} = 252,5 \times 10^3$ mm^4; this is a principal value
c. $I_{yz} = 0$

Explanation 3.26-1:

Location of the normal centre from the top-right corner of the cross-section:
$y_C = 350$ mm and $z_C = 200$ mm

Explanation 3.26-2:

The NC is at the centre of the cross-section due to symmetry

Explanation 3.26-3:

Location of the normal centre from the top-right corner of the cross-section:
$y_C = 15$ mm and $z_C = 22,5$ mm

Answers 3.26-4:

a. $I_{yy} = 319{,}167 \times 10^3$ mm^4; this is not a principal value
b. $I_{zz} = 372{,}5 \times 10^3$ mm^4; this is not a principal value
c. $I_{yz} = -87{,}5 \times 10^3$ mm^4

Explanation 3.26-4:

Location of the normal centre from the bottom-right corner of the cross-section:
$y_C = 39{,}167$ mm en $z_C = -17{,}5$ mm

Answers 3.26-5:

a. $I_{yy} = 110 \times 10^3$ mm^4; this is a principal value
b. $I_{zz} = 920 \times 10^3$ mm^4; this is a principal value
c. $I_{yz} = 0$

Explanation 3.26-5:

The NC is at the centre of the cross-section due to symmetry

Answers 3.26-6:

a. $I_{yy} = 3{,}067 \times 10^9$ mm^4; this is a principal value
b. $I_{zz} = 6{,}667 \times 10^9$ mm^4; this is a principal value
c. $I_{yz} = 0$

Explanation 3.26-6:

First calculate the moments of inertia of the large rectangle then subtract the moments of inertia of the smaller square