MINISTERUL EDUCATIEI CERCETARII SI TINERETULUI
UNIVERSITATEA TEHNICA "GH. ASACHI" IASI
FACULTATEA DE CONSTRUCTII

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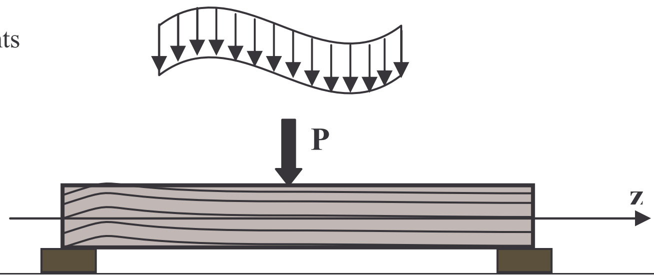
TIMBER CONSTRUCTION

1.	Design of timber elements is done according to Romanian Code NP005-96 using the following method:				
a.	allowable strength design method (ASDM)	b.	limit states design method (LSDM)	c.	both methods

2.	According to limit states design method of timber member with simple cross-section, for „i" yield stress „m_{iT}" represents:				
a.	coefficient of side stability	b.	coefficient of working conditions	c.	treatment coefficient

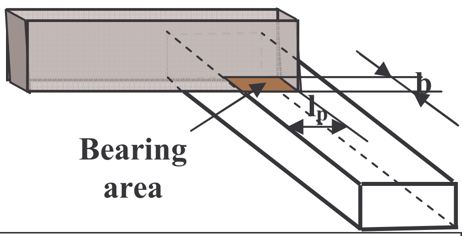
3.	Design resistance of a timber beam subjected to "i" stress represents:				
a.	The maximum stress which is taken by beam	b.	The stress of the specific cross-section having the maximum load	c.	The stress of the cross-section situated on middle of the beam length

4. The design resistance (LSDM) of timber elements subjected to bending is evaluated using:



a.	$M_r = R_i^c W_n m_{Ti}$	b.	$M_r = \sigma_{max,ef} W_n$	d.	$M_r = \tau_{max,ef} \frac{bI}{S}$

5. The bearing area is evaluated using the bearing coefficient, m_r, which has the following values:



a.	$m_r < 1,0$	b.	$1,0 \leq m_r \leq 2,0$	c.	$m_r = 0$

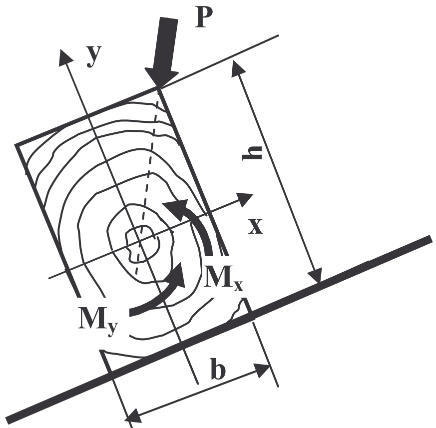
6.	The final maximum deflection of bending elements is evaluated with:				
a.	$f_{max,ef} \leq f_{adm}$	b.	$f_{max,final} = f_1 + f_2 + f_3 - f_c$	c.	$f_{max,ef} = \frac{1}{250} L$ where L is the beam span

7.	The maximum deflections under a biaxial bending is given by the following loads combination:				
a.	dead load + variable + joint deformation - precamber	b.	dead load + variable load + precamber	c.	joint deformation

8.	Which of the following elements is subjected to bending:				
a.	rafter and joist	b.	purlin and arch	c.	wall plate and post

9.	Which element is subjected primarily to biaxial bending?				
a.	rafter	b.	purlin vertical to horizontal plan	c.	purlin vertical to the roof slope

10. Timber beams are subjected to biaxial bending and their verification equation is:

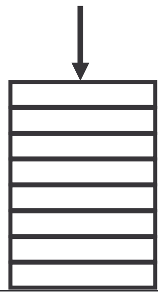


a. $\sigma_{max,ef} = \frac{(M_x)_{max}}{W_{xn}} + \frac{(M_y)_{max}}{W_{yn}}$

b. $\sigma_{max,ef} \leq \sigma_{ai}$

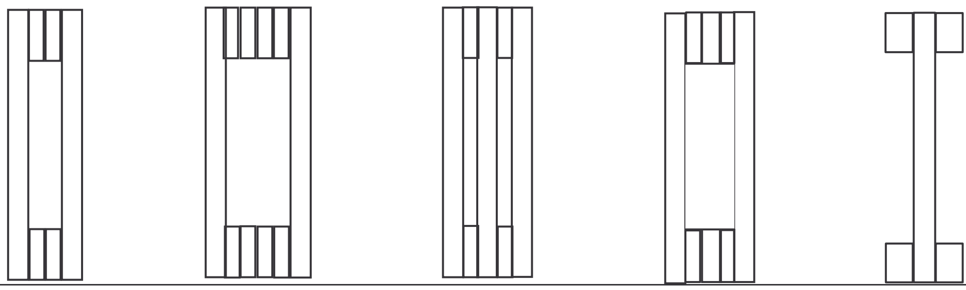
c. $\pm \frac{(M_x)_{max}}{(M_x)_r} \pm \frac{(M_y)_{max}}{(M_y)_r} \leq 1$

11. Glulam beams have design resistance higher than solid timber beam due to:



a. the adhesive presence increases the shear behavior and the material is optimized by dispersing the strength-reducing defects in the laminating material throughout the member;
b. net area of highly stress cross-section in the case of glulam member is larger than that of solid timber in the same location;
c. high-quality laminations are located in that portion of the cross-section, which is more highly stressed;

12. The following cross-section is representative for plywood web beams. For design resistance are used the following mechanical characteristics of:



a. the flanges material

b. the web material

c. both types of material proportional to their influence

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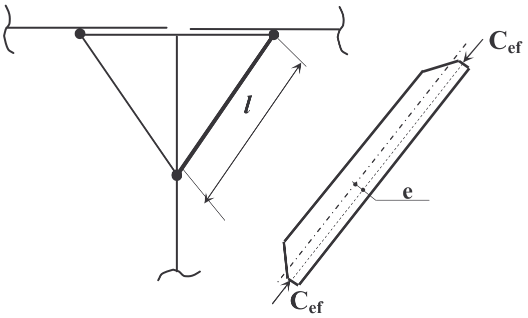
13. The verification of the bracing from the attached figure is evaluated with:



a.	$C_{ef} / \varphi A \pm M_{ef}^{f} / W \le R_{c\parallel}^{c}$	b.	$C_{ef} / \varphi C_r \pm M_{ef}^{f} / M_r = 1$	c.	$- C_{ef} / C_r \pm M_{ef}^{f} / M_r \le 1$

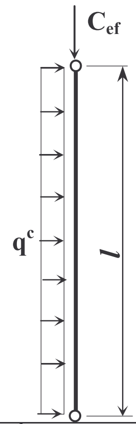
14. For the short beam or beams subjected in transverse direction by the compression force C_{ef}, the stress evaluation is done with:

a.	$\sigma = \dfrac{C_{ef}}{m_T A_{calcul}}$	b.	$\sigma = \dfrac{C_{ef}\lambda^2}{3100 A_{net}}$	c.	$\sigma = \dfrac{C_{ef}}{\varphi A}$

15. Design resistance of an axial compression member is established with:

a.	$C_r \le R_{c\parallel}^{c} A_{net}$	b.	$C_r = R_{c\parallel}^{c} A_{calcul} \varphi m^{c}_{T}$	c.	$C_r \ge R_{c\parallel}^{c} A$

16. For solid timber column from the attached figure the verification of maximum stress is given by:

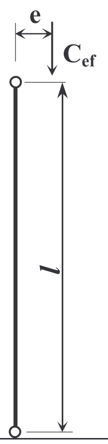


a.	$- C_{ef} / C_r \pm M_{ef}^{f} / M_r \le 1$	b.	$- C_{ef} / C_r \pm M_{ef}^{f} / M_r > 1$	c.	$C_{ef} / \varphi A_{calcul} \pm M_{ef}^{f} / W_{calcul} \le R_{c\parallel}^{c}$

17. The equation $\varphi = \dfrac{3100}{\lambda^2}$ defines:

a.	working coefficient	b.	moisture content variation coefficient during construction service	c.	buckling coefficient

18. Timber elements from the figure are subjected to:



a.	biaxial bending	b.	compression and bending	c.	axial compression

19. The strength condition for a round wood column of 3, 0 m length subjected to axial compression force C_{ef}, is given by the equation:

a.	$\sigma_{ef} = \frac{C_{ef}}{\lambda^2 A_{brut}} \le R_{c\|\|}^{c}$	b.	$\sigma_{ef} = \frac{C_{ef}}{\varphi A_{net} m^{c}_{T}} \le R_{c\|\|}^{c}$	c.	$\sigma_{ef} = \frac{C_{ef}}{A} \le R_{c\|\|}^{c}$

20. A timber column subjected to buckling from compression is working in elastic domain when the slenderness ratio is:

a.	$\lambda = 75$	b.	$\lambda > 75$	c.	$\lambda < 75$

21. The effective (buckling) length, l_f, of a timber column subjected to axial compression depends on:

a.	column length	b.	intensity of compression force	c.	type of end joints

22. The design resistance of a timber column subjected to eccentric compression force is given by:

a.	$C_r = R_{c\|\|}^{c} A_{calcul} \varphi m^{c}_{T}$	b.	$C_r = R_{c\|\|}^{c} A_{brut} m^{c}_{T}$	c.	$C_r = R_{c\|\|}^{c} W_{calcul} \varphi$

23. For solid timber column subjected to eccentric compression the load capacity is verified with the relation:

a.	$\frac{C_{ef}}{\varphi C_r} + \frac{M^{f}_{ef}}{M_r} = 1$	b.	$-\frac{C_{ef}}{C_r} \pm \frac{M^{f}_{ef}}{M} \le 1{,}0$	c.	$\frac{C_{ef}}{\varphi A_{calcul}} \pm \frac{M^{f}_{ef}}{W_{calcul}} \le R_{c\|\|}^{c}$

24. For a double hinge column, the buckling length is:

a.	$l_f = 0{,}65\, l$	b.	$l_f = 1{,}20\, l$	c.	$l_f = l$

25. In the case of a column subjected to eccentric compression, the strength verification is done taking into account the axial compression only if:

a.	$M^{f}_{ef} / W_{calcul} = 0{,}1\, C_{ef} / A_{calcul}$	b.	$M^{f}_{ef} / W_{calcul} > 10\,\%\, C_{ef} / A_{calcul}$	c.	$M^{f}_{ef} / W_{brut} \le 10\,\%\, C_{ef} / A_{brut}$

26. For top chord of a timber truss, the buckling length is:

a.	$l_f = l$ – the member length between the theoretical end nodes	b.	$l_f = 0{,}56\, l$	c.	$l_f = 1{,}5\, l$

27. For a compound beam, the design resistance is given by $T_{r,i} = R_t^{c} \cdot A_{net,i} \cdot m_{T,i} \cdot m_R$, where m_R represents:

a.	coefficient of characteristic strength	b.	distribution coefficient of loads between wood components of compound beam	c.	coefficient of technological processes applied during the element fabrication

28. Shear verification of timber elements subjected to compression and bending is given by:

a.	$L_r = L_{ef}^f$	b.	$L_r \geq L_{ef}^f$	c.	$L_r \leq L_{ef}^f$

29. Carpentry roof structure is:

a.	a plane structure covered by metal sheet	b.	a spatial roof structure	c.	a strength structure for buildings

30. Posts are:

a.	wood elements to sustain the floor	b.	wood elements to sustain the purlins of roof structure	c.	rigidity elements

31. The wood supports and bracings are:

a.	woods elements for structure strengthening and rigidity	b.	wood elements of frames	c.	a beam type from carpentry roof structure

32. Which type of connection do assure o fixed joint?

a.	Joint with dowel-type fasteners	b.	Framed joints with double notch in the front area	c.	Glued timber joint

33. In the case of framed (carpentry) joint the yield stress in connected elements are:

a.	Bearing and shear stress	b.	Shear stress	c.	Bending

34. When assessing the effective cross-section of multi-dowelled joints, the total number of dowels (nails, screws) is placed:

a.	all bolts or dowels lie on the total length of lateral wood piece of joint	b.	all bolts or dowels lie on one or multiple rows, but at least on half of the length in doubled number	c.	it has no importance

35. Which is the importance of the post base?

a.	Aesthetic role	b.	To increase the transmission surface of the load	c.	No importance

36. The wall plate represents:

a.	A strength member subjected to compression	b.	A wood member to assure the bearing of wood elements in roof strength structure	c.	A beam subjected to bending

37. The maximum allowable height of a timber structure is:

a.	Three floors	b.	Basement and ground floor	c.	Any floors