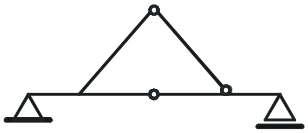
No.1

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

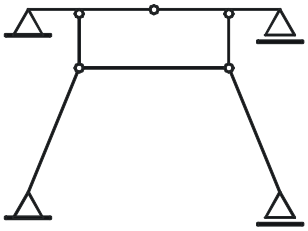


1. n = 0 (statically determined) 2. n = -1 (mechanism) 3. n = 1 (hyperstatic)

1 ☐
2 ☐
3 ☐

No. 2

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

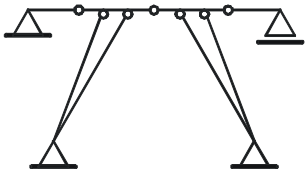


1. n = 1 (hyperstatic) 2. n = 0 (statically determined) 3. n = -1 (mechanism)

1 ☐
2 ☐
3 ☐

No. 3

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

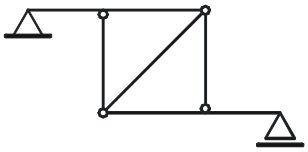


1. n = 0 (statically determined) 2. n = 1 (hyperstatic) 3. n = -2 (mechanism)

1 ☐
2 ☐
3 ☐

No. 4

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

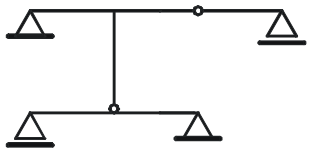


1. n = 0 (statically determined) 2. n = 1 (hyperstatic) 3. n = -1 (mechanism)

1 ☐
2 ☐
3 ☐

No. 5

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

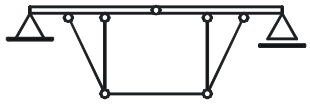


1. n = -1 (mechanism) 2. n = 1 (hyperstatic) 3. n = 0 (statically determined)

1 ☐
2 ☐
3 ☐

No. 6

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

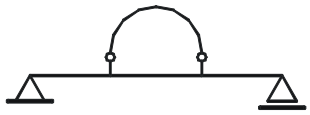


1. n = 1 (hyperstatic) 2. n = 0 (statically determined) 3. n = -1 (mechanism)

1 ☐
2 ☐
3 ☐

No. 7

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

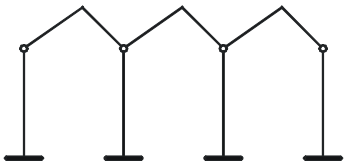


1. n = -1 (mechanism) 2. n = 0 (statically determined) 3. n = 1 (hyperstatic)

1 ☐
2 ☐
3 ☐

No. 8

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :



1. n = 3 (hyperstatic) 2. n = 0 (statically determined) 3. n = -1 (mechanism)

1 ☐
2 ☐
3 ☐

No. 9

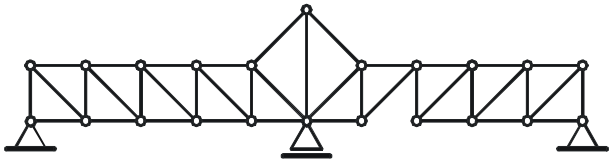
Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

1. n = 0 (statically determined) 2. n = -1 (mechanism) 3. n = 1 (hyperstatic)

1 ☐
2 ☐
3 ☐

No. 10

Let specify which value of „*n*" (the static indeterminacy degree) is the correct one for the following structure :

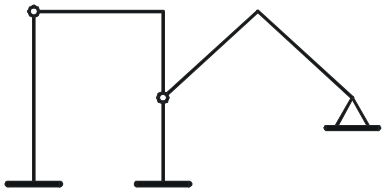


1. n = -1 (mechanism) 2. n = 0 (statically determined) 3. n = 1 (hyperstatic)

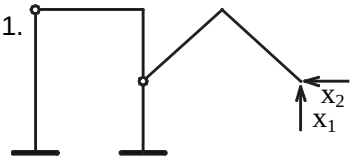
1 ☐
2 ☐
3 ☐

No. 11

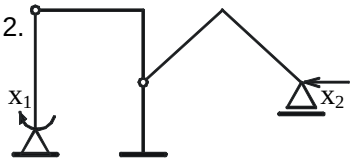
Let specify which is the correct primary determinate structure for the following system, to be solved by applying the force method:



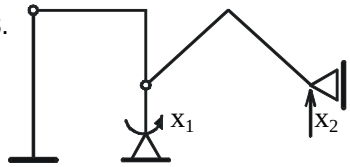
1.



2.



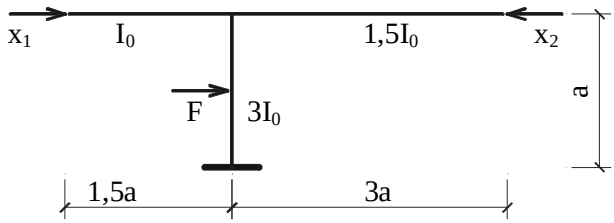
3.



1 ☐
2 ☐
3 ☐

No. 12

Indicate which is the correct relationship set between the unknown coefficients (in force method) for the shown primary determinate structure:



1. $\begin{cases}\delta_{11} \neq \delta_{22} \\ \delta_{12} = \delta_{21}\end{cases}$ 2. $\begin{cases}\delta_{11} = -\delta_{12} \\ \delta_{22} = \delta_{12}\end{cases}$ 3. $\{\delta_{11} = \delta_{22} = -\delta_{12} = -\delta_{21}$

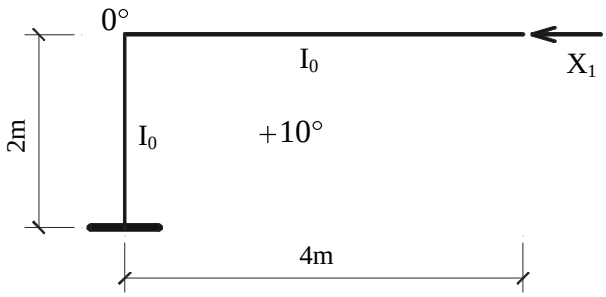
1 ☐
2 ☐
3 ☐

No. 13

For the shown primary determinate structure let specify the correct value of the free term Δ_{1t}, if:

$\alpha_t = 10^{-5} {}^{\circ}C^{-1}$

$I_0 = \frac{40x100^3}{12}, cm^4$



1. $\Delta_{1t} = -20 \cdot 10^{-5}$ 2. $\Delta_{1t} = 0$ 3. $\Delta_{1t} = 20 \cdot 10^{-5}$

1 ☐
2 ☐
3 ☐

No. 14

If in the following system of elastic equations,

$$(1)\ \delta_{11} \cdot X_1 + \delta_{12} \cdot X_2 + \delta_{13} \cdot X_3 + \Delta_{1p} = 0$$

$$(2)\ \delta_{21} \cdot X_1 + \delta_{22} \cdot X_2 + \delta_{23} \cdot X_3 + \Delta_{2p} = 0$$

$$(3)\ \delta_{31} \cdot X_1 + \delta_{32} \cdot X_2 + \delta_{33} \cdot X_3 + \Delta_{3p} = 0$$

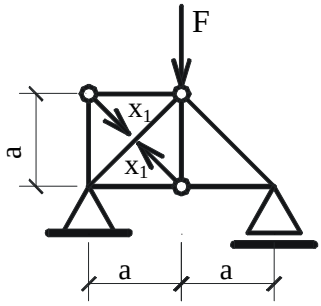
the unknowns coefficients of equations (1) and (2) check the verification relationships, but those from the third equation didn't match, then:

1. the coefficient δ_{31} is wrong 2. the coefficient δ_{32} is wrong 3. the coefficient δ_{33} is wrong

1 ☐
2 ☐
3 ☐

No. 15

For the primary system, let specify which is the correct relationship of the elastic equlibrium equation (EA = constant):

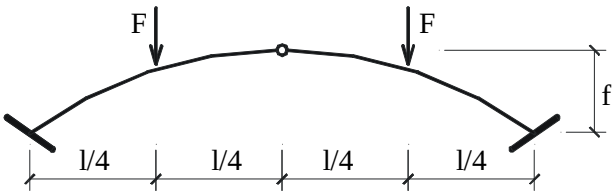


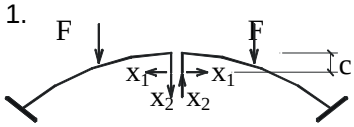
1. $(\delta_{11} + \frac{a \cdot \sqrt{2}}{EA}) \cdot X_1 + \Delta_{1p} = 0$ 2. $(\delta_{11} - \frac{a \cdot \sqrt{2}}{EA}) \cdot X_1 = 0$ 3. $\delta_{11} \cdot X_1 + \Delta_{1p} = \frac{a \cdot \sqrt{2}}{EA} \cdot X_1$

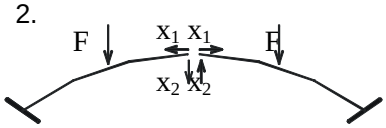
1 ☐
2 ☐
3 ☐

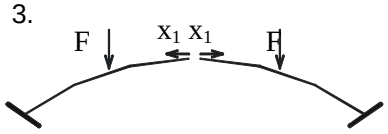
No. 16

For the following arch, let specify which primary system is the most efficient to be used in force method (EI = constant).



1.


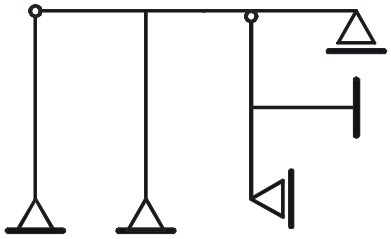
2.


3.


1 ☐
2 ☐
3 ☐

No. 17

Let specify the correct value of the kinematic-elastic degree of indeterminacy „Z” for the following structure (neglecting the axial beam deformations):

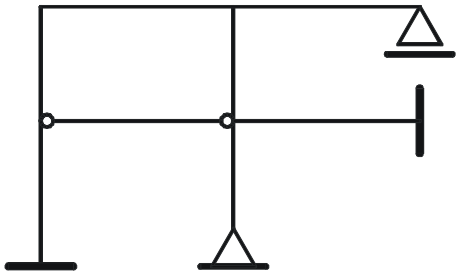


1. Z = 5 2. Z = 6 3. Z = 4

1 ☐
2 ☐
3 ☐

No.18

Let specify the correct value of the kinematic-elastic degree of indeterminacy „Z” for the following structure (neglecting the axial beam deformations):

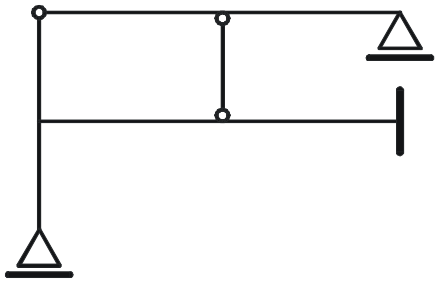


1. Z = 4 2. Z = 5 3. Z = 6

1 ☐
2 ☐
3 ☐

No.19

Let specify the correct value of the kinematic-elastic degree of indeterminacy „Z” for the following structure (neglecting the axial beam deformations):

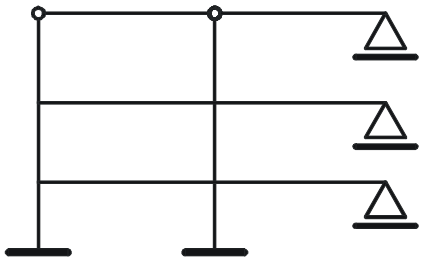


1. Z = 4 2. Z = 5 3. Z = 6

1 ☐
2 ☐
3 ☐

No. 20

Let specify the correct value of the kinematic-elastic degree of indeterminacy „Z” for the following structure (neglecting the axial beam deformations):

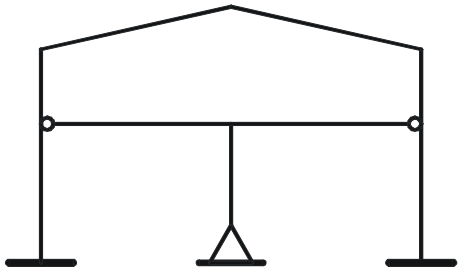


1. Z = 9 2. Z = 7 3. Z = 4

1 ☐
2 ☐
3 ☐

No. 21

Let specify the correct value of the kinematic-elastic degree of indeterminacy „Z” for the following structure (neglecting the axial beam deformations):

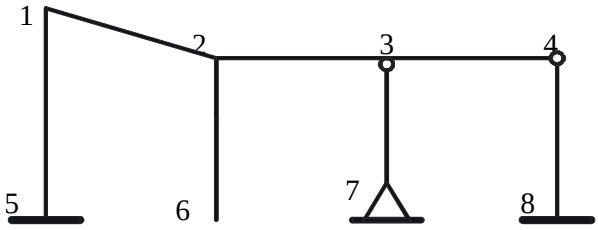


1. Z = 5
2. Z = 8
3. Z = 9

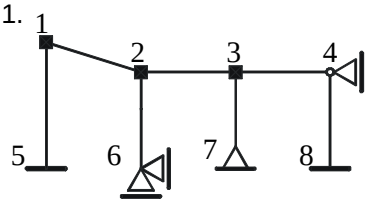
1 ☐
2 ☐
3 ☐

No. 22

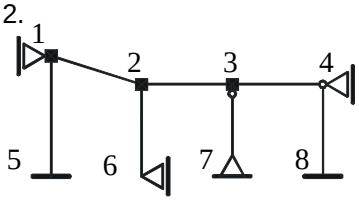
Let specify the correct primary system, geometrically determined for the following frame:



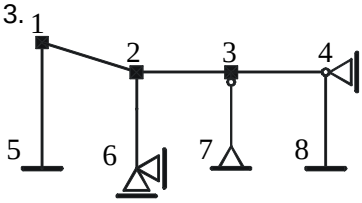
1.



2.



3.



1 ☐
2 ☐
3 ☐

No. 23

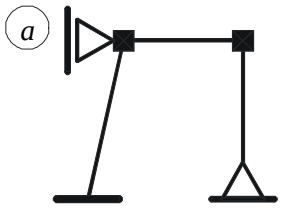
How many meanings could have a coefficient „S_y” from the equations system of the stiffness method, the analytical form, with joint elastic displacements as unknowns:

1. - 2 meanings
2. - 3 meanings
3. - 4 meanings

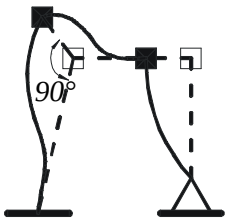
1 ☐
2 ☐
3 ☐

No. 24

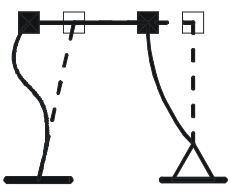
Let specify the correct deformed shape of the indicated elastic degree of freedom (a):



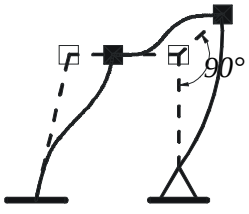
1.



2.



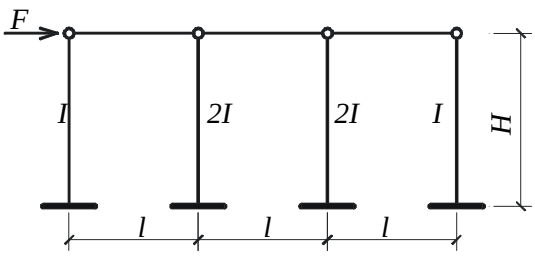
3.



1 ☐
2 ☐
3 ☐

No. 25

For the following hyperstatic frame, let specify which method is the most efficient to be used.

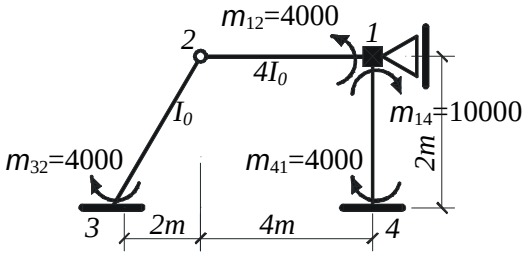


1. Force method 2. Stiffness method 3. Anyone

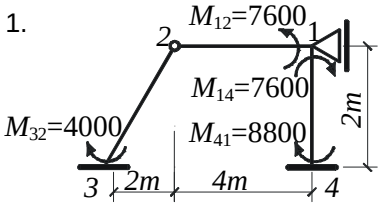
1 ☐
2 ☐
3 ☐

No.26

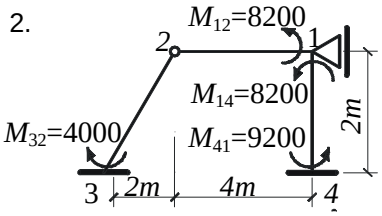
For the fully fixed end bending moments m_{ij} let specify which are the correct bending moments after the distribution and spreading process (Cross equilibrium);



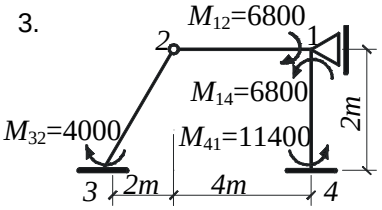
1.



2.



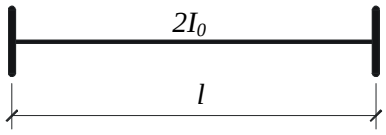
3.



1 ☐
2 ☐
3 ☐

No. 27

For the following fully fixed ends beam with a constant cross sectional area (moment of inertia - $2I_0$), the reduced stiffness matrix in local coordinates is:



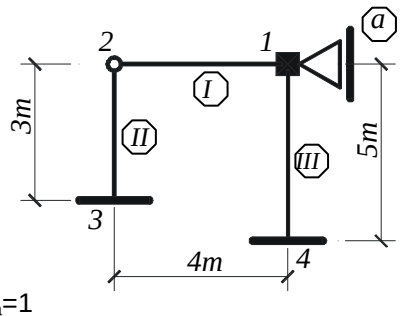
1. $[k]_{ij} = \frac{4 \cdot E \cdot I_0}{l} \cdot \begin{bmatrix} 1 & 0{,}5 \\ 0{,}5 & 1 \end{bmatrix}$ 2. $[k]_{ij} = \frac{4 \cdot E \cdot I_0}{l} \cdot \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$ 3. $[k]_{ij} = \frac{4 \cdot E \cdot I_0}{l} \cdot \begin{bmatrix} 4 & 2 \\ 2 & 4 \end{bmatrix}$

1 ☐
2 ☐
3 ☐

No. 28

Let specify which is the correct expression of the joint displacement transformation matrix in deformations of the beam ends for the following frame:

$EI_0=10^5 KNm^2$



$y_1=1$ $y_a=1$

1. $[A]=\begin{bmatrix} 1 & 0 \\ 0 & -0,333 \\ 1 & -0,2 \\ 0 & -0,2 \end{bmatrix} \begin{matrix} \theta_{12} \\ \theta_{32} \\ \theta_{14} \\ \theta_{41} \end{matrix}$

$y_1=1$ $y_a=1$

2. $[A]=\begin{bmatrix} 1,5 & -0,333 \\ 1,5 & 0,25 \\ 0 & 0 \\ 0 & 0,25 \end{bmatrix} \begin{matrix} \theta_{12} \\ \theta_{32} \\ \theta_{14} \\ \theta_{41} \end{matrix}$

$y_1=1$ $y_a=1$

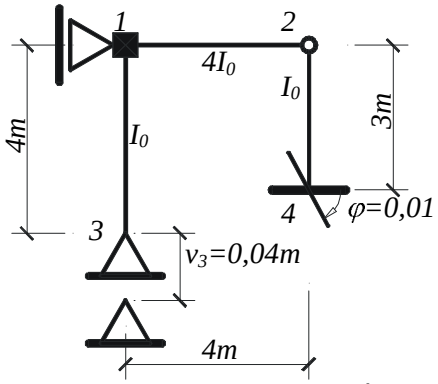
3. $[A]=\begin{bmatrix} 0 & 0 \\ 0 & 0,25 \\ 1 & -0,25 \\ 1 & 0 \end{bmatrix} \begin{matrix} \theta_{12} \\ \theta_{32} \\ \theta_{14} \\ \theta_{41} \end{matrix}$

1 ☐
2 ☐
3 ☐

No. 29

Let specify which are the correct fully fixed end bending moments m_{ij} for the indicated settlements (beam oriented bending moments):

$EI_0=10^5 KNm^2$



1. $\begin{cases} m_{12} = -2500\,KN \cdot m \\ m_{42} = 1000\,KN \cdot m \end{cases}$

2. $\begin{cases} m_{12} = 3000\,KN \cdot m \\ m_{42} = 1000\,KN \cdot m \end{cases}$

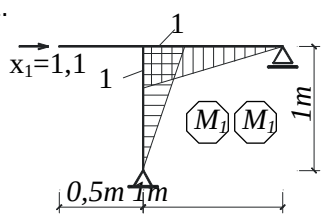
3. $\begin{cases} m_{12} = 3000\,KN \cdot m \\ m_{42} = -2500\,KN \cdot m \end{cases}$

1 ☐
2 ☐
3 ☐

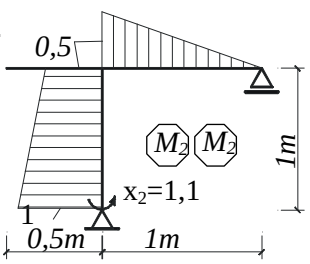
No.30

Let specify the wrong bending moment diagram - M_1, M_2 or M_s.

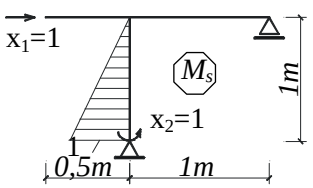
1.



2.



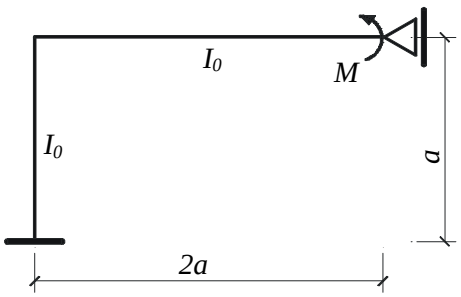
3.



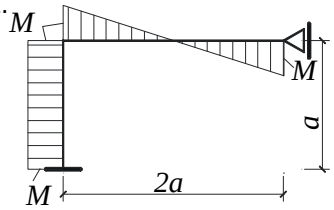
1 ☐
2 ☐
3 ☐

No.31

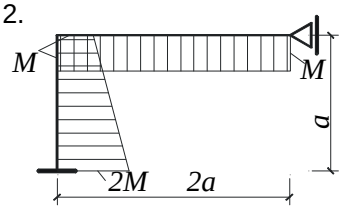
For the following structure, using the elastic equilibrium condition, let specify which is the correct bending moment diagram:



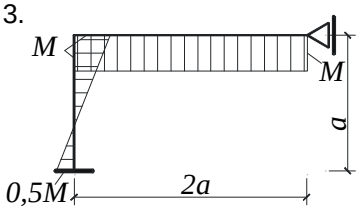
1.



2.



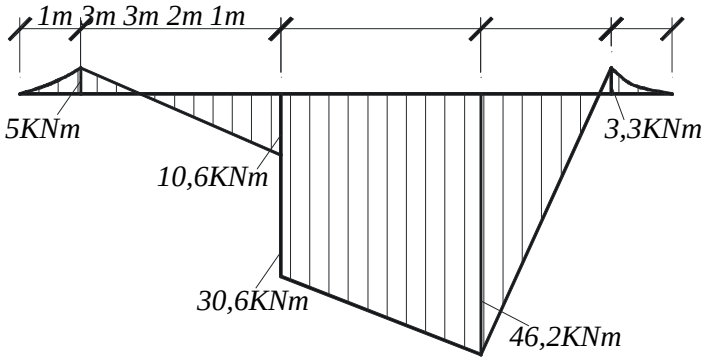
3.



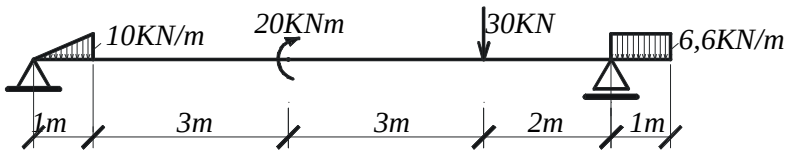
1 ☐
2 ☐
3 ☐

No.32

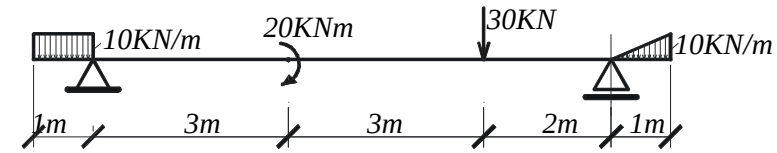
Let specify which beam corresponds to the following bending moment diagram:



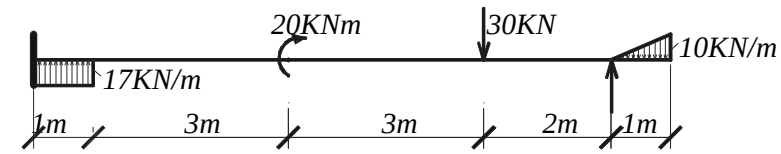
1.



2.



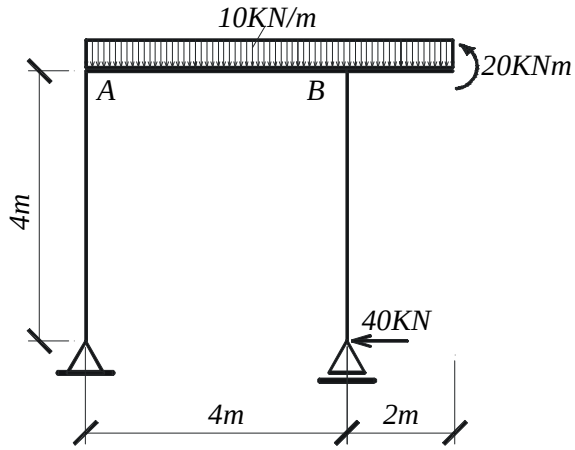
3.



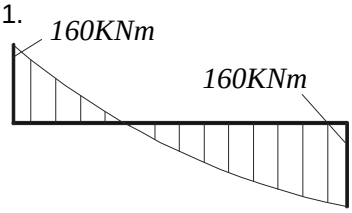
1 ☐
2 ☐
3 ☐

No.33

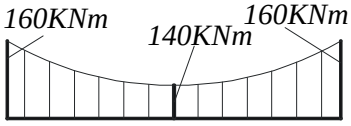
For the following structure let specify which is the correct bending moment diagram for the AB beam:



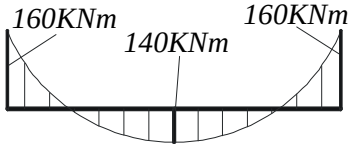
1.



2.



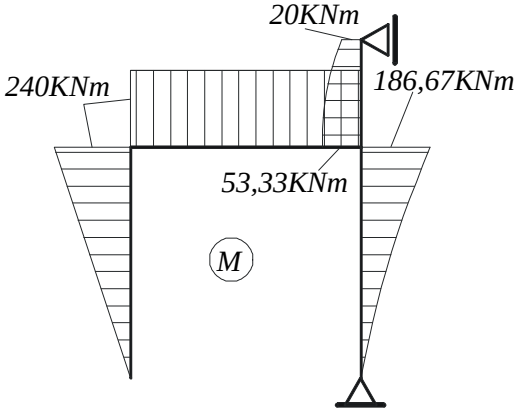
3.



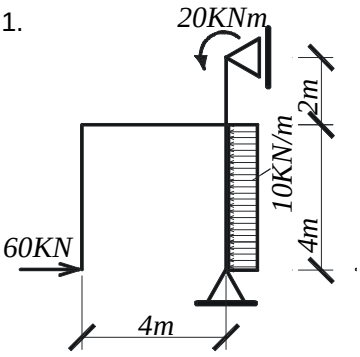
1 ☐
2 ☐
3 ☐

No.34

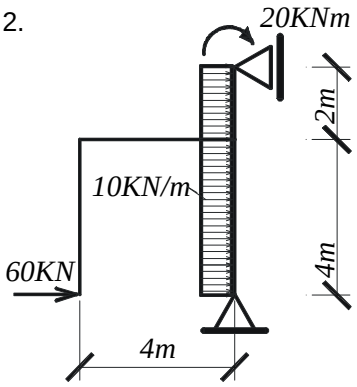
Let specify which of the indicated loads lead to the shown bending moment diagram:



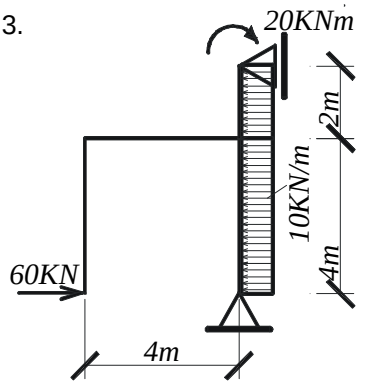
1.



2.



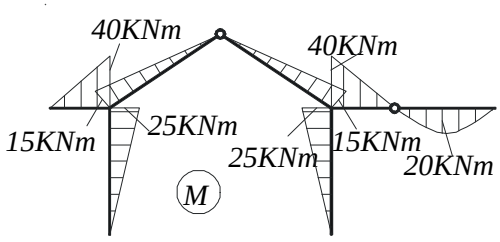
3.



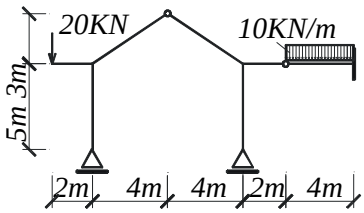
1 ☐
2 ☐
3 ☐

No.35

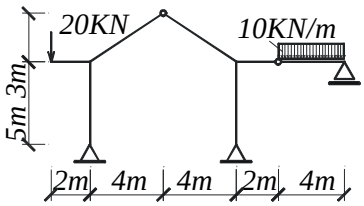
Let specify which of the indicated supports correspond to the shown bending moment diagram:



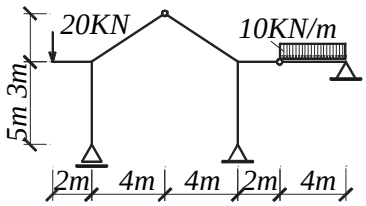
1.



2.



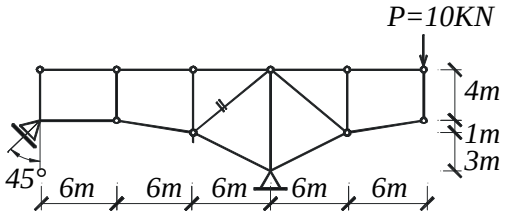
3.



1 ☐
2 ☐
3 ☐

No.36

Let specify which is the correct axial force value for the indicate beam of the following truss:



1. N = -1,06 KN

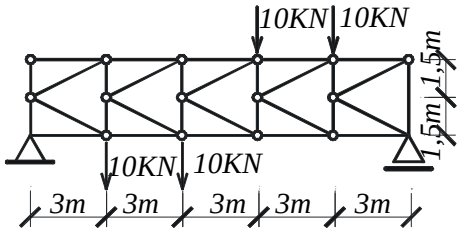
2. N = 2,31 KN

3. N = 1,06 KN

1 ☐
2 ☐
3 ☐

No.37

Let specify which is the correct axial force value for the indicate beam of the following truss:



1. N = 9,452 KN

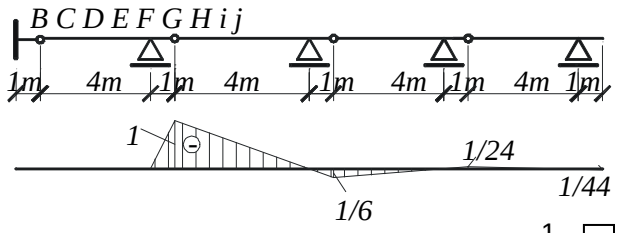
2. N = -11,186 KN

3. N = -9,452 KN

1 ☐
2 ☐
3 ☐

No.38

Let specify for which internal effort corresponds to the following influence line:

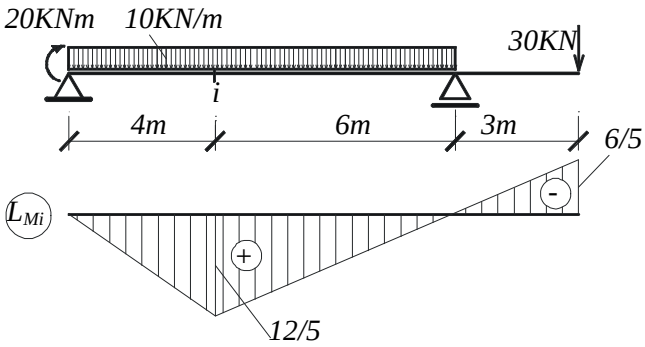


1. V_C 2. M_C 3. M_E

1 ☐
2 ☐
3 ☐

No.39

Let specify which is the correct value of the bending moment for the „i" cross section of the following simple supported beam, when the corresponding influence line is known.

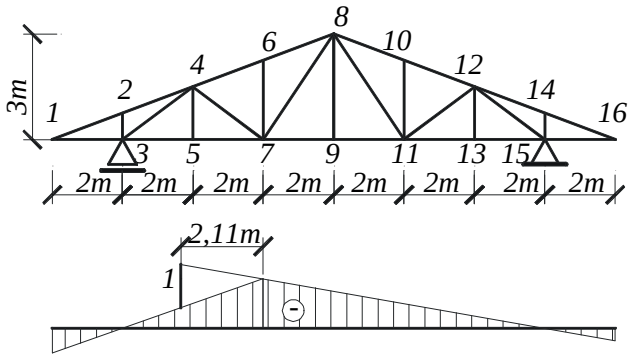


1. M_i = - 48 KNm 2. M_i = 72 KNm 3. M_i = 96 KNm

1 ☐
2 ☐
3 ☐

No.40

Let specify for which axial effort of the following truss system the influence line has been drawn.

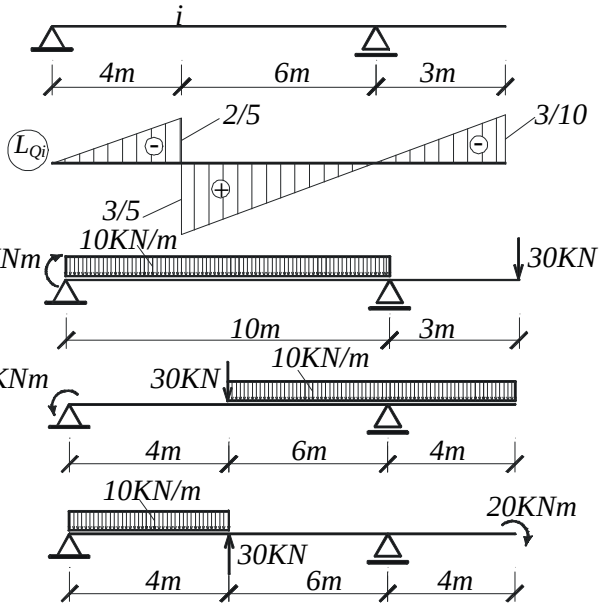


1. N_{46} 2. N_{67} 3. N_{57}

1 ☐
2 ☐
3 ☐

No.41

Knowing the shear force influence line at „i” cross section, let specify which loads combination lead to a shear force value of Q_i=25KN.



1.

2.

3.

1 ☐

2 ☐

3 ☐