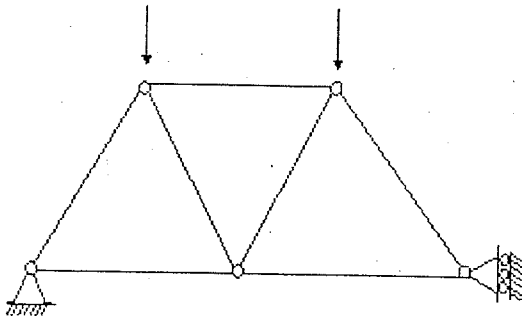


SK ENGINEERING ACADEMY

Structural Analysis - 1

Question No. 1

The Truss shown below

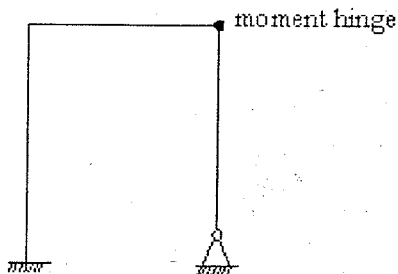


- (a) is stable and determinate (b) is unstable
(c) is indeterminate by one (d) is indeterminate by two

Question No. 2

Fill in the blank(s):

The kinematic indeterminacy of the frame shown below is _____ (neglecting axial deformations)

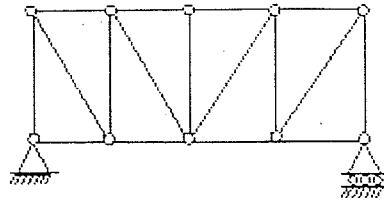


C

Question No. 3

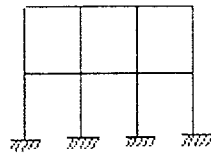
Examine the following combinations of frames and suitable methods of analysis

P



: Force methods

Q



: Displacement methods

(a) both P & Q are correct

(b) 'P' only correct

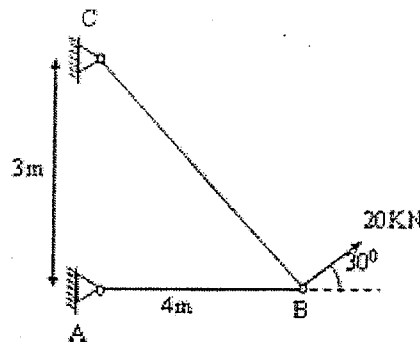
(c) 'Q' only correct

(d) Neither P, nor Q correct

Question No. 4

Fill in the blank(s):

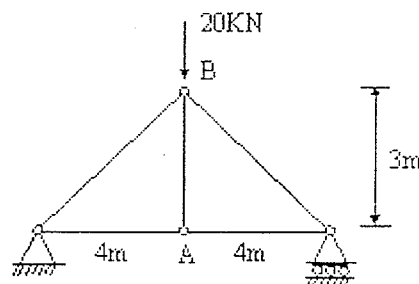
The force in the member 'AB' of Truss shown below is _____ KN



Question No. 5

Fill in the blank(s):

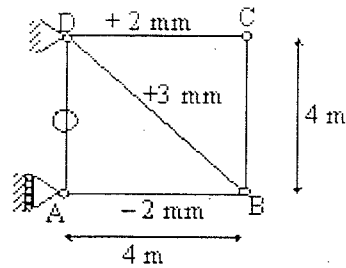
The strain energy stored in the member 'AB' of the Truss shown below is _____ KN



Question No. 6

Fill in the blank(s):

Axial deformations due to certain load system are shown in fig. The rotation of the member BC is _____ radians



Sign convention followed:

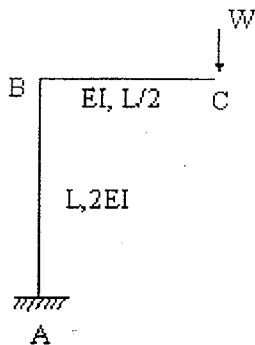
(- ve) represents contraction

(+ ve) represents elongation

Question No. 7

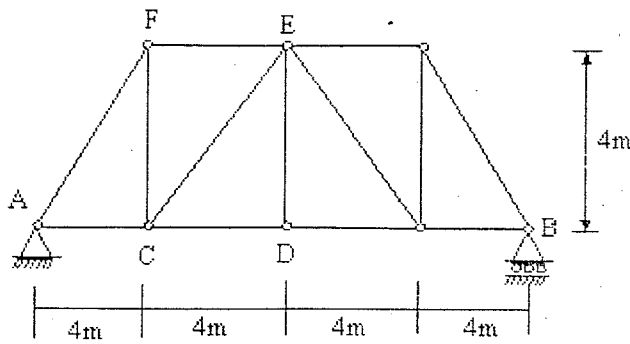
Fill in the blank(s):

The horizontal deflection of the point 'C' of the frame shown below is $\frac{WL^3}{KEI}$ where K is _____ (neglect axial deformations)



Question No. 8

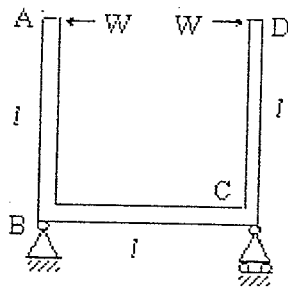
The member 'CD' of the truss from below has a lack of fit of 2mm less than the true length. The member 'EF' has 2mm more. The horizontal deflection of the support 'B' is ___



- (a) 2mm outside (b) 2mm inside
 (c) 4mm inside (d) zero

Question No. 9

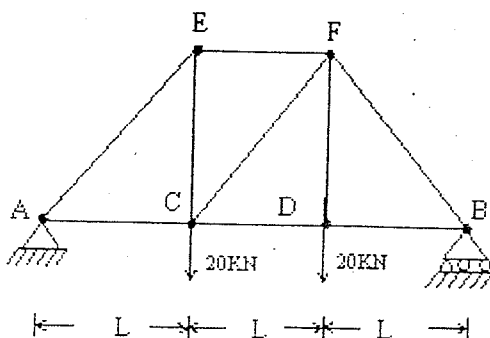
Find the relative displacement of points A and D in the structure of uniform section shown in fig. Assume flexural rigidity of EI for vertical members and 2EI for horizontal members



- (a) $\frac{5We^3}{3EI}$ (b) $\frac{7We^3}{6EI}$ (c) $\frac{7We^3}{3EI}$ (d) $\frac{5We^3}{6EI}$

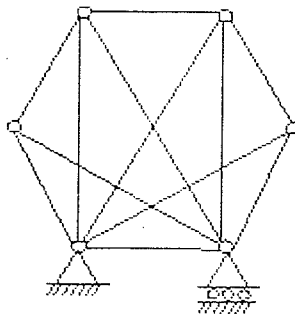
Fill in the blank(s):

In the truss shown in the figure given below, which one of the following members has no force induced in the member 'CF' is ___ KN



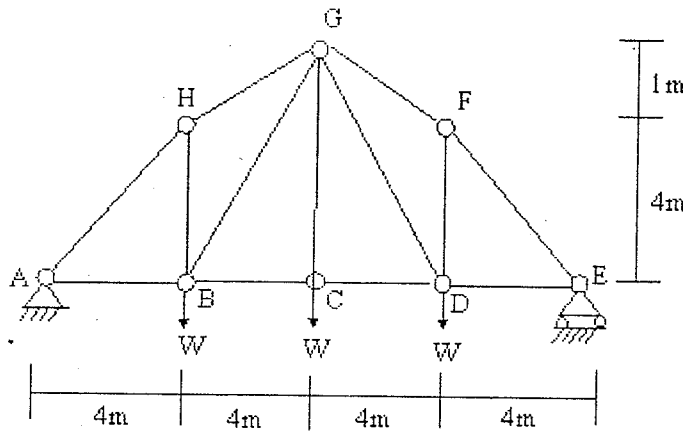
Question No. 11

The static and kinematic indeterminacy of frame shown are respectively



- (a) 3,9 (b) 9,3 (c) 2,9 (d) 8,3

Question No. 12



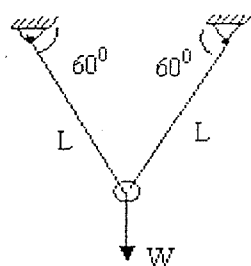
The force in the member 'GH' is

- (a) $\frac{3\sqrt{17}}{2} W$ (compression) (b) $\frac{3\sqrt{17}}{2} W$ (Tension)
 (c) $3\sqrt{17} W$ (compression) (d) $3\sqrt{17} W$ (Tension)

Question No. 13

Fill in the blank(s):

For truss shown, vertical deflection = $\frac{K \cdot WL}{AE}$ Value of 'K' is _____



Question No. 14

Match List I (Method) with List II (Factors) and select the correct answer using the codes given below the lists:

List I

- P. Moment distribution method
- Q. Slope deflection method
- R. Kani's method
- S. Force Method

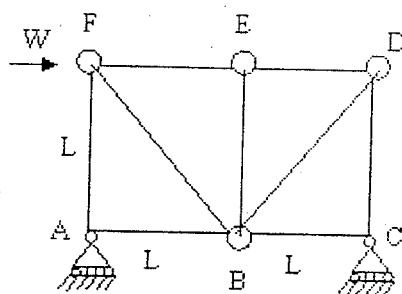
List II

- 1. Rotation factor
- 2. Flexibility
- 3. Hardy Cross
- 4. Displacements
- 5. Stiffness matrix

- (a) P - 3 Q - 4 R - 1 S - 2
- (b) P - 2 Q - 1 R - 5 S - 3
- (c) P - 2 Q - 4 R - 1 S - 3
- (d) P - 3 Q - 1 R - 5 S - 2

Question No. 15

The force in the member 'DE' of the frame shown is



- (a) W (Compression)
- (b) W (Tension)
- (c) $\frac{W}{2}$ (compression)
- (d) $\frac{W}{2}$ (Tension)