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Q:) Castigliano's first theorem is applicable

A : For statically determinate structures only

B : When the system behaves elastically

C : Only when principle of superposition is valid

D : None of the above

Q:) Principle of superposition is applicable when

A : Deflections are linear functions of applied forces

B : Material obeys hooke's law

C : The action of applied forces will be affected by small deformations of the structure

D : None of the above

Q:) In moment distribution method, the sum of distribution factors of all the members meeting at any joint is always

A : Zero

B : Less than 1

C : 1

D : Greater than 1

Q:) If M is the external moment which rotates the near end of a prismatic beam without translation (the far end being fixed), then the moment induced at the for end is

A : M/2 in same direction as M

B : M/2 in opposite direction as M

C : M in opposite direction

D : 0

Q:) If one end of a prismatic beam AB with fixed ends, is given a transverse displacement Δ without any rotation, then the transverse reactions at A or B due to displacement is

A : $\frac{6EI\Delta}{1^2}$

B : $\frac{6EI\Delta}{1^3}$

C : $\frac{12EI\Delta}{1^2}$

D : $\frac{12EI\Delta}{1^3}$

Where l is span of beam AB and EI is flexural rigidity

Q:) In column analogy method, the area of an analogous column for a fixed beam of span L and flexural rigidity EI is taken as

A : L/EI

B : L/2 EI

C : L/3 EI

D : L/4 EI

Q:) The degree of static indeterminacy up to which column analogy method can be used is

A : 2

B : 3

C : 4

D : unrestricted

Q:) A single rolling load of 8 kN rolls along a girder of 15 m span. The absolute maximum bending moment will be

A : 8 kN.m

B : 15 kN.m

C : 30 kN.m

D : 60 kN.m

Q:) The maximum bending moment due to a train of wheel loads on a simply supported girder

A : Always occurs at centre of span

B : Always occurs under a wheel load

C : Never occurs under a wheel load

D : None of the above

Q:) When a uniformly distributed load. Longer than the span of the girder, moves from left to right, then the maximum bending moment at mid section of span occurs when the uniformly distributed load occupies

A : Less than the left half span

B : Whole of left half span

C : More than the left half span

D : Whole span

Q:) Which of the following is not the displacement method ?

A : Equilibrium method

B : Column analogy method

C : Moment distribution method

D : Kani's method

Q:) The muller-Breslau principle can be used to

1. Determinate the shape of the influence line
2. Indicate the parts of the structure to be loaded to obtain the maximum effect
3. Calculate the ordinates of the influence lines

The correct answer is

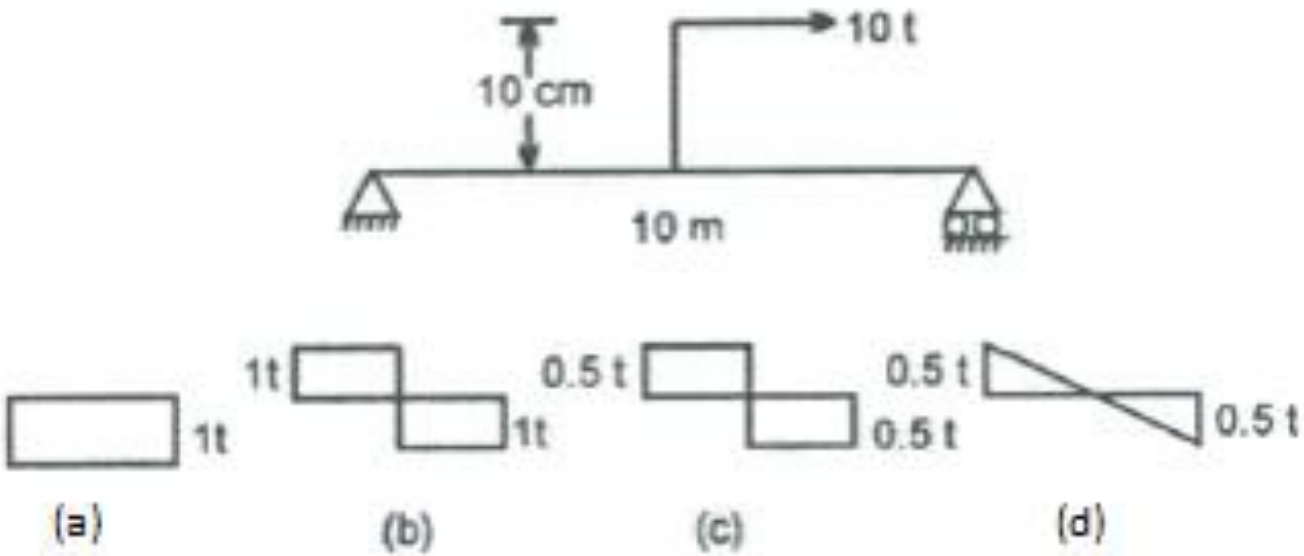
A : Only (1)

B : Both (1) and (2)

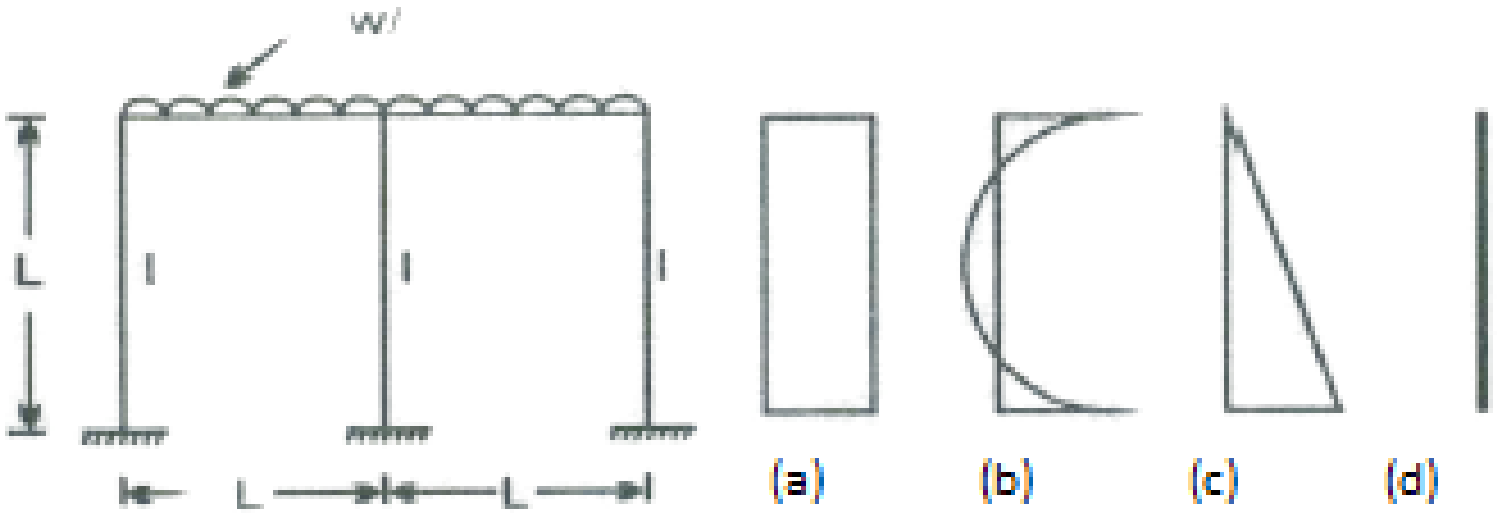
C : Both (2) and (3)

D : All (1) , (2) and (3)

Q:) The correct shear force diagram for the beam shown below is



Q:) The correct bending moment diagram for the middle column of the frame shown below is



Q:) The reaction at support A of the propped cantilever beam shown in fig.

A : 0

B : 1 t

C : 0.5 t

D : 2 t

Q:)

For unyielding support, the slope deflection equation for part BC of the beam shown in fig

A : $M_{BC} = M_{FBC} + \frac{2EI_2}{L_2}(2\theta_B + \theta_C)$

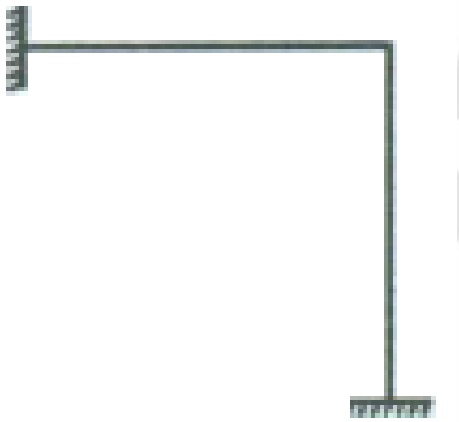
B : $M_{BC} = M_{FBC} + \frac{2EI_2}{L_2}(2\theta_C + \theta_B)$

C : $M_{BC} = M_{FBC} + \frac{2EI_2}{L_2}(2\theta_B + \theta_C) + \frac{1}{2}M_{FBC}$

D : $M_{BC} = M_{FBC} + \frac{2EI_2}{L_2}(2\theta_B + \theta_C) + M_{FBC}$

Where symbols have their usual meanings

Q:)



What is the degree of static indeterminacy of the structure shown in fig

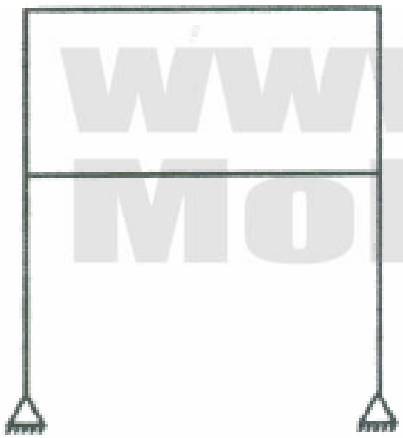
A : 1

B : 2

C : 3

D : 4

Q:)



What is the degree of kinematic indeterminacy of the structure of the beam shown in fig. if the axial deformation is ignored?

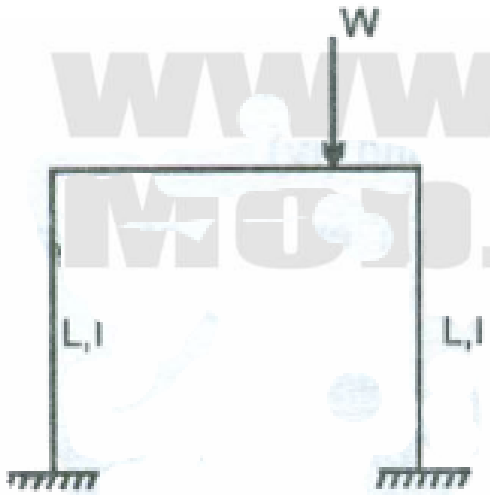
A : 8

B : 10

C : 12

D : 14

Q:)



The portal frame shown in fig. will

A : Not sway

B : Sway towards left

C : Sway towards right

D : Sway either to left or right