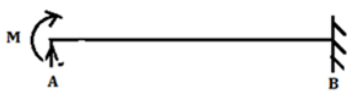
قائمة الاسئلة

تحليل انشاءات 2-قسم الهندسة المدنية-المستوى الثالث-درجة الأختبار 60 درجة-الزمن ثلاث ساعات

د / نظمي المخلافي

1) Which of the following methods of structural analysis is a force method?
   1) - slope deflection method
   2) - Moment Distribution Method
   3) + Virtual Work Method
   4) - All
2) For Displacement Methods Which of the following is unknown in this method?
   1) - force
   2) - support reactions
   3) + displacement
   4) - can't say
3) To convert indeterminate structure to a determinate structure, number of force release to be provided equals to :
   1) - Number of equilibriums equations for the respective structures available
   2) - External Static Indeterminacy only
   3) + Static Indeterminacy degree
   4) - Internal Static Indeterminacy only
4) Static Indeterminacy degree for pin jointed plane frame or truss is given by
   1) - (m + r) – 3j
   2) + (m + r) – 2j
   3) - (3m + r) -3j
   4) - (6m + r) – 6j
5) Statically indeterminate structure requires
   1) - Equilibrium Conditions Only
   2) - Compatibility Conditions Only
   3) + Equilibrium and Compatibility Condition together
   4) - Cannot be solved analytically
6) Indeterminate structures are economical than determinate structure.
   1) + TRUE.
   2) - FALSE.
7) For a beam with N supports; How many Slope Deflection Equations are possible?
   1) - N
   2) - 2N
   3) - N-1
   4) + 2N-2
8)

Carryover Moment at end B due to moment M applied at end A for the given propped beam is :

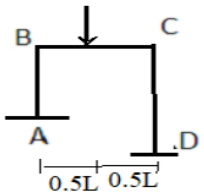


1) - (+M)
2) - (- M)
3) + (+ 0.5M)
4) - (– 0.5M)

9) Carryover Moment is defined as :
1) - The moment applied at one end to cause unit slope at the support
2) - The additional moment applied at one end to completely resist the rotation caused due to external loading
3) + The moment developed or induced at one end due to a moment at another end
4) - The moment applied at one end to cause unit slope at another end

10)

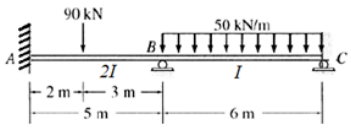
For the frame shown:
A and D are fixed



State whether this statement is true or false. :
This frame is a non – sway frame.

1) - TRUE.
2) + FALSE.

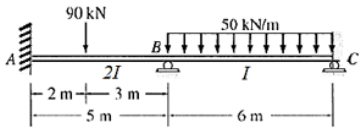
11)



The Moment Distribution factor for AB (Df_{AB}) is :

1) + 0
2) - 0.5
3) - 0.75
4) - 1

12)



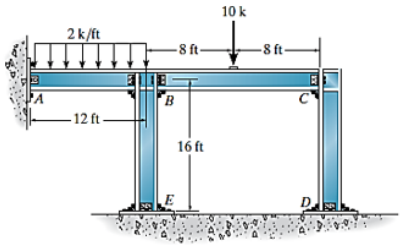
The Moment Distribution factor for BA ($D.F._{BA}$) is

1) - 0.294
2) - 0.455
3) - 0.545
4) + 0.706

13)

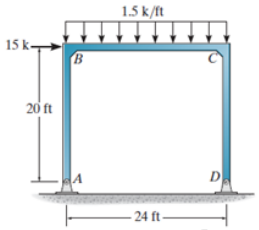
For the frame shown in Fig *A*,*E*, and *D* are fixed. *EI* is constant.

The Moment Distribution factor for member BC is:



1) + 0.3
2) - 0.33
3) - 0.43
4) - None of them

14)



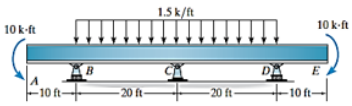
Moment Distr. Table

Joint	B		C	
Member	BA	BC	CB	CD
DF	①	②		
FEM		−72.0	72.0	
⋮	⋮	⋮	⋮	⋮

The missing value No ① in the Moment Distr. Table is :

1) - 0.545
2) - 0.526
3) + 0.474
4) - None of them

15)



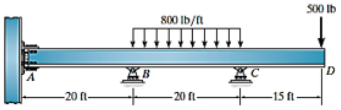
Moment Distr. Table

Joint	B	C		D
Member	BC	CB	CD	DC
DF	1	0.5	0.5	1
FEM	-50	50	-50	50
Dist.	(1)			
CO				

The missing value No (1) in the Moment Distr. Table is :

1) - 50
2) - -50
3) + 40
4) - -40

16)



Moment Distr. Table

Joint	A	B		C
Member	AB	BA	BC	CB
DF	0	0.5	0.5	1
FEM	0	0	-26.67	26.67
	0	13.33	13.33	-19.167
	6.667	0	-9.583	6.667
		(1)		

The missing value No (1) in the Moment Distr. Table is :

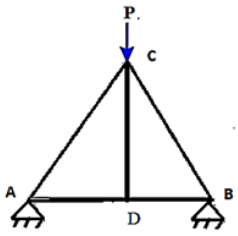
1) - 3.333
2) - -3.333
3) + 4.792
4) - -4.792

17)

For the given external redundant truss, EA constant ;

P = 10 kN; $L_{AD} = L_{DB} =$ 2m and $L_{DC} = 4$m

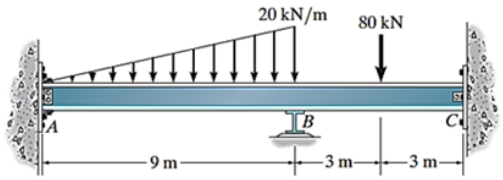
Calculate the F_1 value of the member AC, by considering the horizontal reaction of support B as a redundant force.



1) + 0 kN
2) - 1 kN
3) - 2.89 kN
4) - 3 kN

18)

For the beam shown:
support at *B* is a roller
C is Pin
A is fixed
EI constant

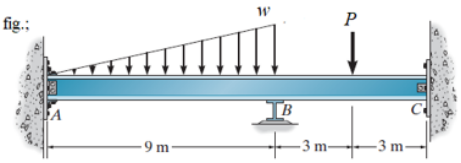


the value of FEM_{BC} *is:*

1) - 90 kN.m
2) - 60 kN.m
3) - -40 kN.m
4) + -90 kN.m

19)

For the contnous beam shown in fig.;
Assume A is fixed supported,
B is a roller, and C is a pin.
EI is constant

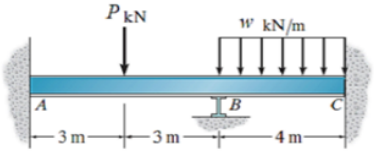


If w = 10 kN/m and P = 40 kN ; then the value of FEM_{AB} *will be:*

1) - 67.5 kN.m
2) - 45 kN.m
3) + -27 kN.m
4) - -40.5 kN.m

20)

For the beam shown:
support at *B* is a roller
A and *C* are fixed.
EI constant



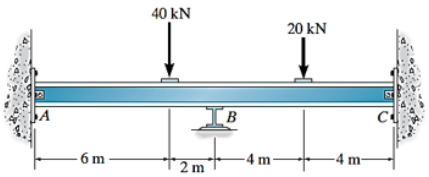
W = 15 kN/m ; P= 25kN ; the value of FEM_{BC} *is:*

1) + -20 kN.m
2) - -30 kN.m
3) - - 5 kN.m
4) - -7.5 kN.m

21)

For the beam shown in Figure the supports at *A* and *C* are pins and *B* is a roller. *EI* is constant.

The value of FEM_{BA} *Is:*



1) - -15 kN.m
2) - 37.5 kN.m
3) - - 45 kN.m
4) + 52.5 kN.m

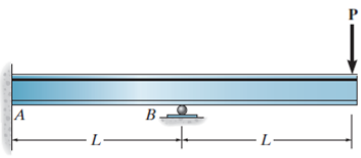
22) How many rotations are possible in case of 3-dimensional frame/beam?

1) - 1
2) - 2
3) + 3
4) - 4

23)

For the beam shown in Fig.

The Moment at support A (M_A) is:



A	$\frac{-PL}{2}$
B	$\frac{PL}{2}$
C	$\frac{-PL}{4}$
D	$\frac{PL}{4}$

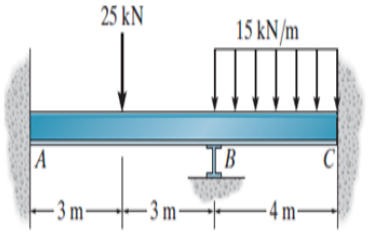
1) - A
2) + B
3) - C
4) - D

24)

For the Beam Shown in Fig.

$\theta_B = \frac{0.75}{EI}$

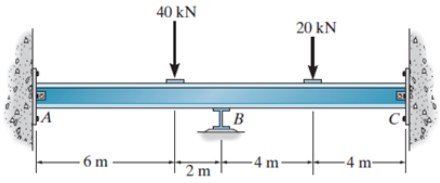
So, the Moment At support B is:



1) - -13 kN.m
2) + -19.25 kN.m
3) - -28.5 kN.m
4) - -75.5 kN.m

25)

For the Beam Shown in Fig.
A and C are pin, B is roller.
The Equation For M_{BA} is :



a	0.375EI θ_B - 45
b	0.375EI θ_B + 52.5
c	0.5 EI θ_B - 15
d	0.5 EI θ_B + 52.5

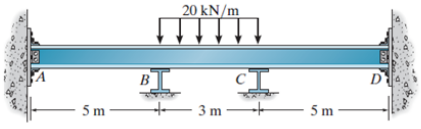
1) - a
2) + b
3) - c
4) - d

26)

P

For the Beam Shown in Fig.
A and D are fixed
B and C are roller.

The Equation For M_{BA} is :



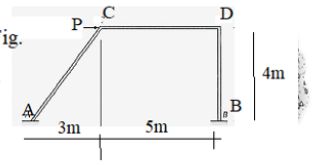
a	0.4 EI θ_B
b	0.3 EI θ_B
c	0.6 EI θ_B
d	0.8 EI θ_B

1) - a
2) - b
3) - c

4) + d

27) P

For the side-sway frame shown in Fig.
EI Constant;
Δ is the horizontal displacement of member BD
In this case; the moment M_{CD} is :

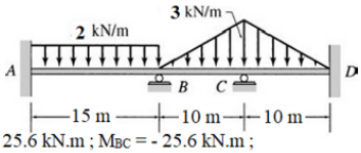


a	$0.8EI\theta_C + 0.4EI\theta_D + 0.3\ EI\Delta$
b	$0.4EI\theta_C + 0.8EI\theta_D + 0.3\ EI\Delta$
c	$0.8EI\theta_C + 0.4EI\theta_D + 0.18EI\Delta$
d	$0.4EI\theta_C + 0.8EI\theta_D + 0.18EI\Delta$

1) - a
2) - b
3) + c
4) - d

28) P

For the beam shown in Fig. it was found that :



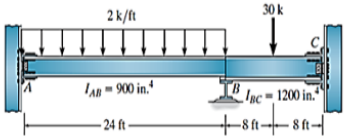
M_{AB} = -43.4 kN.m ; M_{BA} = 25.6 kN.m ; M_{BC} = - 25.6 kN.m ;
M_{CB} = 10.5 kN.m ; M_{CD} = -10.5 kN.m ; M_{DC} = 12.2 kN.m ;

What will be the vertical reaction at B?

1) - 6.5 kN
2) - 13.8 kN
3) - 16.2 kN
4) + 20.3 kN

29) P

For the beam above it was found that:
$M_{AB} = -102\ k\cdot ft$ $M_{BA} = 84\ k\cdot ft$
$M_{BC} = -84\ k\cdot ft$ $M_{CB} = 48\ k\cdot ft$



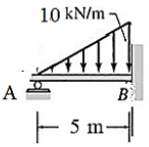
What will be the distance of max +ve moment at span AB from A?

1) - 11.625 ft
2) - 8.125 ft

3) - 12 ft
4) + 12.375 ft

30)

For the beam shown in Fig.:
It was found that the reactions are:
Ay = 5 kN ; By = 20 KN & M_B =-16.67 kN.m

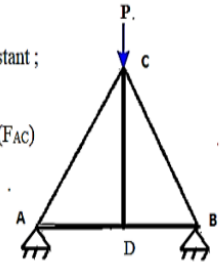


What will be the distance of max +ve moment from A?

1) - 1.67 m
2) + 2.236 m
3) - 2.5 m
4) - 3.33 m

31)

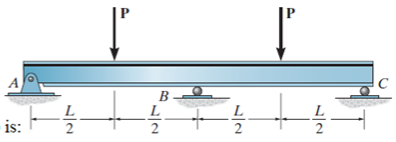
For the given external redundant truss, EA constant ;
P = 10 kN; $L_{AD} = L_{DB} = 2m$; $L_{DC} = 4m$
Calculate the internal force in the member AC (F_{AC}) for the given truss.



1) + - 5.59 kN
2) - - 6.25 kN
3) - - 7.071 kN
4) - - 11.18 kN

32)

For the beam shown in Fig.
The Moment at support B (M_B) is:

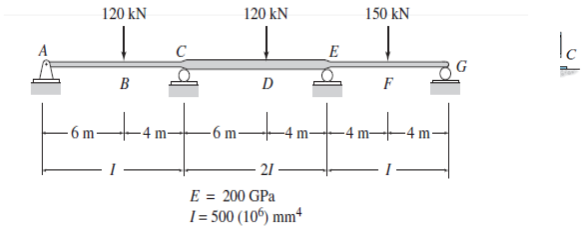


A	$\frac{-PL}{4}$
b	$\frac{-3PL}{8}$
C	$\frac{-PL}{8}$
d	$\frac{-3PL}{16}$

1) - a

2) - b
3) - c
4) + d

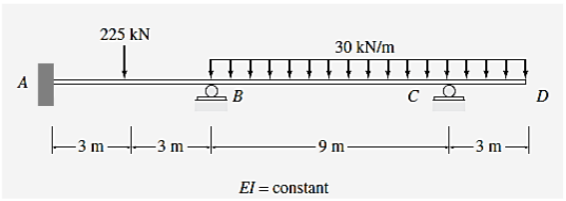
33)



applying the Three-Moment Equation at Joint C; will obtion:

1) + 6MC + ME = -1324.8
2) - 6 MC + ME = - 1267.2
3) - 30 MC + 5ME = -8640
4) - 30MC +5ME = -9216

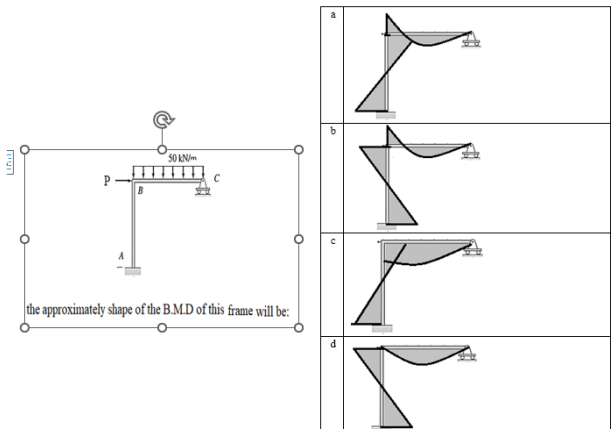
34)



applying the Three-Moment Equation at Joint B; will obtion:

1) - 6MA + 30MB = =-8505
2) - MA + 5MB = -1417.5
3) + MA + 5MB = -1215
4) - None of them

35)

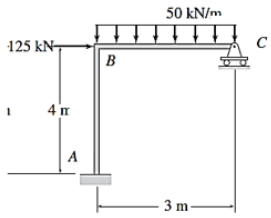


1) - a
2) - b
3) + c
4) - d

36)

the Results of *Moment Distribution*. No sidesway, for the frame shown in Fig. was:

joint	A	B	
member	AB	BA	BC
DF	1	0.500	0.500
FEM	0.00	0.00	-56.25
⋮	⋮	⋮	⋮
Final M1	14.06	28.13	-28.13



for the 2nd step (Moment Distr. with sidesway) it was assumed M_{AB}= 10 kN.m

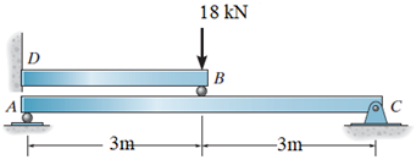
So, what will be the value of the ratio $\frac{S_1}{S_2}$ which will be used to calculate the final moment at each joinf for the side-sway frame above?

1) - -3.376
2) - 3.376
3) + -43.38
4) - 43.38

37)

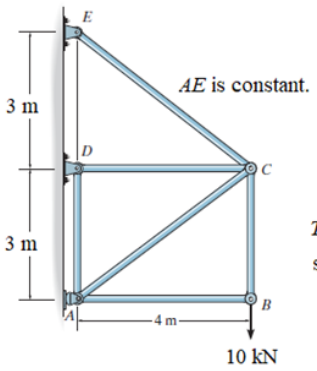
For the beam shown:
Assume *A* is a Roller, C is a pin and *D* is Fixed supports.

Determine the reactions at support *D*.



1) - 0
2) - 4.5 kN
3) + 6 kN
4) - 9 kN

38)



The force in member *AC* of the truss shown in Fig. is equal to : F_{AC} = 7.91 kN (Comp.)

1) + TRUE.
2) - FALSE.