JAN-MAY 2017

Higher Technological Institute
10 th of Ramadan City
(6 th of October Branch)
Civil Engineering Department

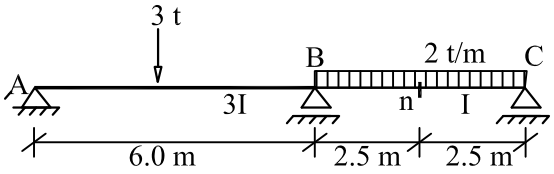
Subject: Structural Analysis (4) (CT 212) Sheet No. (1): Consistant Deformations

Prepared By Dr/Ahmed Abd Elaziz

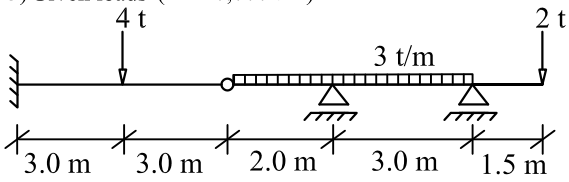
Part A :Beams

Using the method of consistent deformation to draw the bending moment and shear force diagrams due to:-

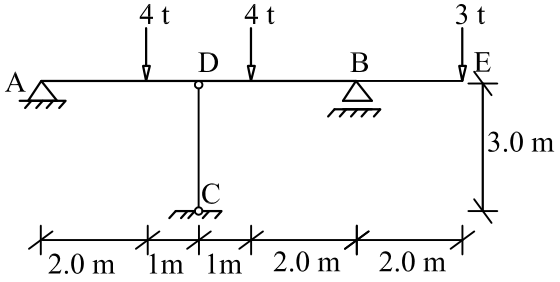
1) a- Given loads (EI=10,000 tm^2)
b-Settelment at support C 2 cm
C-Calculate the deflection at sec.(n) for each case
D-Given loads + 2 cm Settelment at support (C)



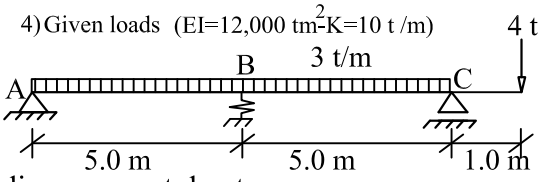
3) Given loads (EI=10,000 tm^2)



2) (EI=12,000 tm^2)
a- Given loads b-Vertical displacement at support δ_C=2 cm
C-Calculate the deflection at sec.(E) for each case



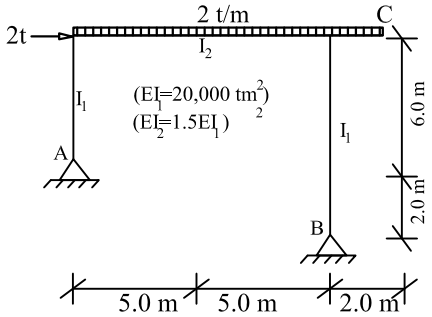
4) Given loads (EI=12,000 tm^2 K=10 t /m)



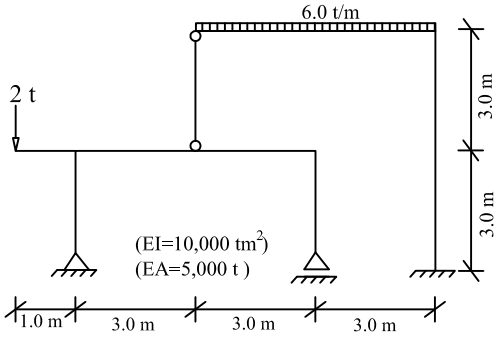
Part B :Frames

Using the method of consistant deformation to draw the bending moment due to :

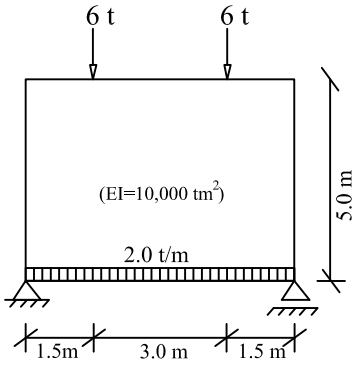
1) A- Given loads
B-Calculate the deflection at sec.(C) for each case
C-Vertical displacement at support δ_B=2 cm
D-Uniform temperature of 20 C
E-Change of temperature
t_1 =20°C,t_2 =0°C , $\alpha=10^{-5}$/°c



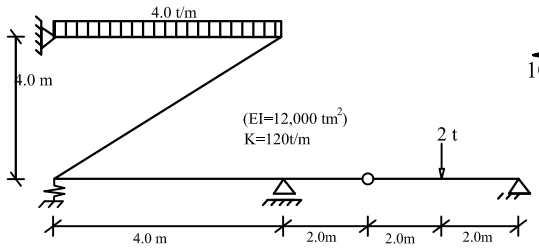
2) Given Loads



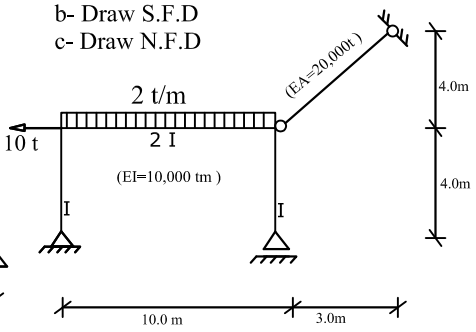
3) a- Given Loads



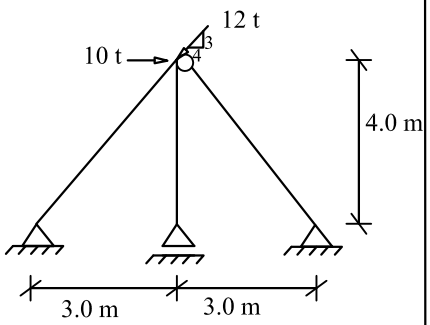
4) a- Given Loads
b- Vertical upward Dis.at spring =2cm



5) a- Given Loads
b- Draw S.F.D
c- Draw N.F.D



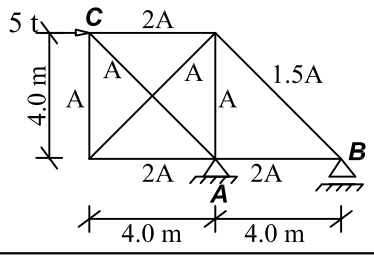
6) a- Given Loads



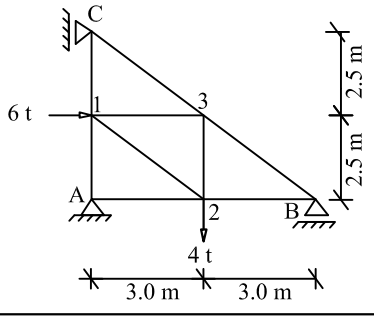
Part C :Trusses

Using the method of consistent deformation to find the member forces for the shown trusses due to:

1) Given loads then calculate the horizontal displacement at joint(C)



2) Given Loads



3) Given Loads