DEFLECTION OF BEAMS (4/4)

CIVE311 – STRUCTURES I

(Wednesday, April 23, 2008)

Exercise I/I

(BASED ON QUIZ 2 – SPRING 2004-05)

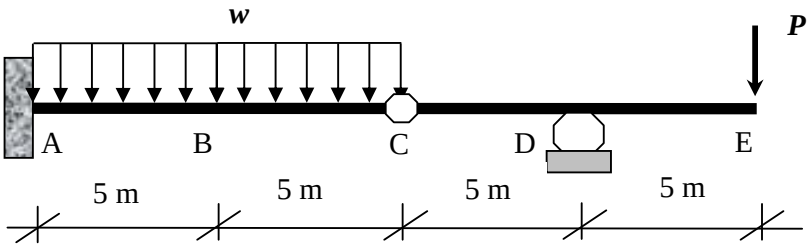

Figure I

Referring to Figure I:
***EI*=1,000,000 kN.m^2** throughout the beam.
***w*=25 kN/m** and ***P*=100 kN** throughout the problem.
Neglect the own weight of the beam.

1. USING THE MOMENT-AREA METHOD

Compute the slopes at C and D (θ_C and θ_D) and the vertical deflections at B and C (v_B and v_C). You can calculate slopes and deflections in whichever order you find suitable.

Calculations and Diagrams:

Calculations and/or Diagrams (cont'd):

Calculations and/or Diagrams (cont'd):

2. USING THE CONJUGATE-BEAM METHOD

Compute/repeat the slopes at C (θ_C) and the vertical deflection at C (v_C).
Compute the maximum downward deflection between A and C and the vertical deflection at E.
Based on the results obtained from questions 1 and 2, sketch the final deflected shape.

Calculations and/or Diagrams:

Calculations and/or Diagrams (cont'd):