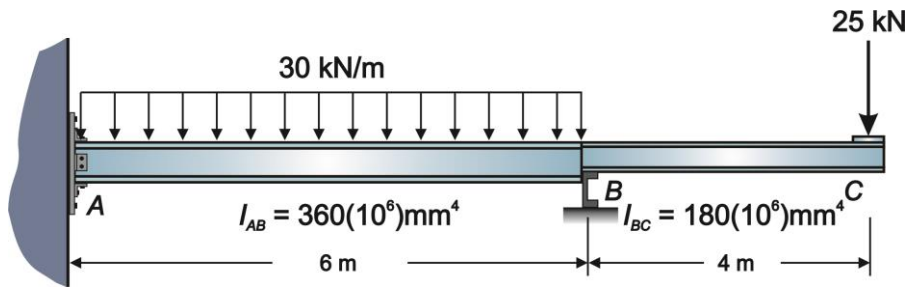


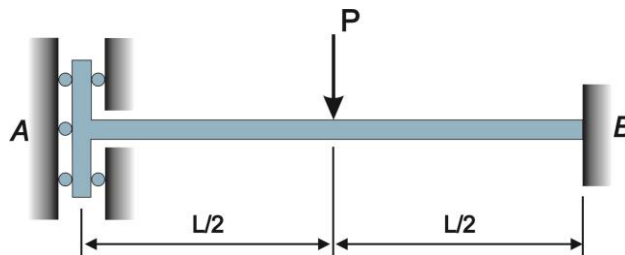
## CV2012 – Structural Analysis II

### Tutorial 5

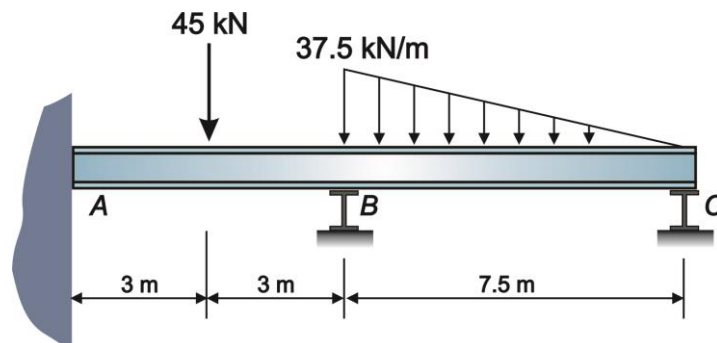
1. Determine the reaction at support B. Assume that the support at A is fixed and B is roller. Take  $E = 200$  GPa. Draw the shear and bending moment diagrams of the beam. [Ref.: Hibbeler, 10-2]  
[Ans:  $B_y = 117.5$  kN (upward)]



2. Determine the reaction at support A. Assume that the support at A only exerts a moment on the beam. EI is constant. Draw the shear and bending moment diagrams of the beam. [Ref.: Hibbeler, 10-4]  
[Ans:  $M_A = PL/8$  (clockwise)]



3. Determine the reaction at support B, then draw the shear and bending moment diagrams. Assume that the support at A is a pin and B and C are rollers. EI is constant. [Ref.: Hibbeler, 10-15]  
[Ans:  $B_y = 146$  kN (upward)]



4. Compute the reactions and draw the shear and bending moment diagrams for the beam shown.  $EI$  is constant. The bolted web connection at  $B$  may be assumed to act as a hinge. Express answer in terms of  $E$ ,  $I$ ,  $L$ , and  $w$ . [Ref.: Leet, 11-9] [Ans:  $M_A=5wL^2/16$  (anti-clockwise),  $M_C=3wL^2/16$  (clockwise),  $R_A=13wL/16$  (upward),  $R_C=3wL/16$  (upward)]

