# SOLUTION OF ASSIGNMENT 2

Q1) Determine A and B support reactions. (Note : Realize that the A support is a type of roller support)
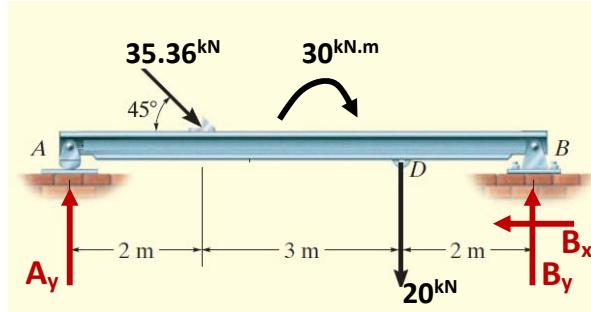
Solution : B is pinned and A is roller support (rocker type)

$\Sigma \overrightarrow{X} =0 \rightarrow 25- B_x=0 \rightarrow$ **B_x=25** kN

$\Sigma \widehat{M_A}=0 \rightarrow 30+20*5-B_y*7+(35.36*0.707)*2=0 \rightarrow$ **B_y=25.71** kN

$\Sigma \widehat{M_B}=0 \rightarrow A_y*7+30-20*2-(35.36*0.707)*5=0 \rightarrow$ **A_y=19.29** kN

Control equation :

$\uparrow \Sigma Y=0 \rightarrow 19.29+25.71-20-25=0$ $\checkmark$

Q2) Determine A and B support reactions.
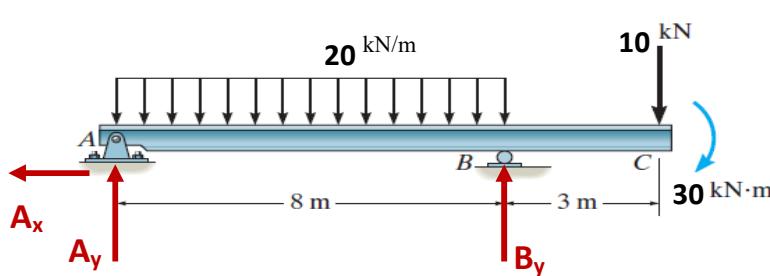
Solution : A is pinned and B is roller support

$\Sigma \overrightarrow{X} =0 \rightarrow$ **A_x=0**

$\Sigma \widehat{M_A}=0 \rightarrow 20*8*4-B_y*8+10*11+30=0 \rightarrow$ **B_y=97.5** kN

$\Sigma \widehat{M_B}=0 \rightarrow A_y*8-20*8*4+10*3+30=0 \rightarrow$ **A_y=72.5** kN

Control equation :

$\uparrow \Sigma Y=0 \rightarrow 97.5+72.5-20*8-10=0$ $\checkmark$

Q3) Determine A and B support reactions.
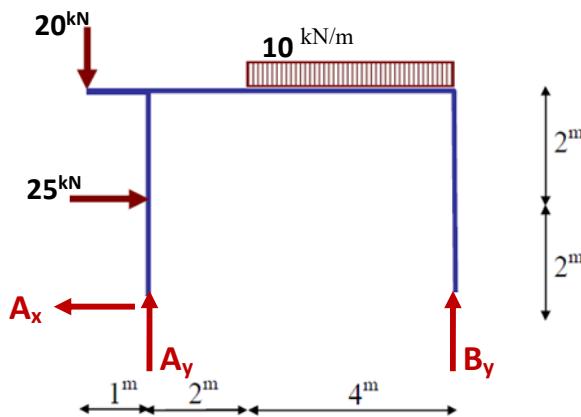
Solution : A is pinned and B is roller support

$\Sigma \overrightarrow{X} =0 \rightarrow 25-A_x=0 \rightarrow$ **A_x=25** kN

$\Sigma \widehat{M_A}=0 \rightarrow 10*4*4-B_y*6+25*2-20*1=0 \rightarrow$ **B_y=31.67** kN

$\Sigma \widehat{M_B}=0 \rightarrow A_y*6+25*2-10*4*2-20*7=0 \rightarrow$ **A_y=28.33** kN

Control equation :

$\uparrow \Sigma Y=0 \rightarrow 31.67+28.33-10*4-20=0$ $\checkmark$