



DEPARTMENT OF CIVIL ENGINEERING

Semester (4th) Major Assignment 2 (Spring Semester 2020)

Subject: Structural Analysis-I

(Course Code):

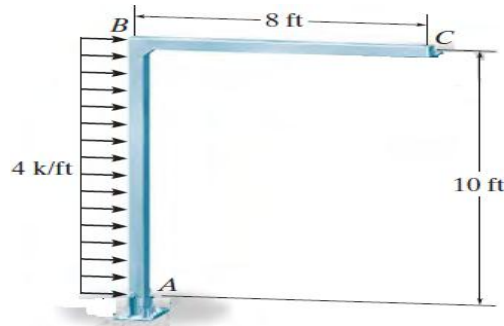
Submission Deadline: 15:00, 26th April

Instructor: Amjad Islam

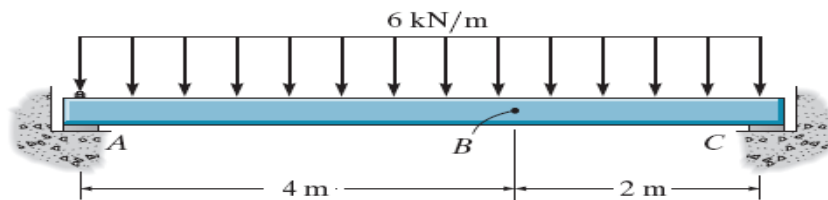
Total Marks: 50

Note: Attempt all questions. Assume any necessary data, if required.

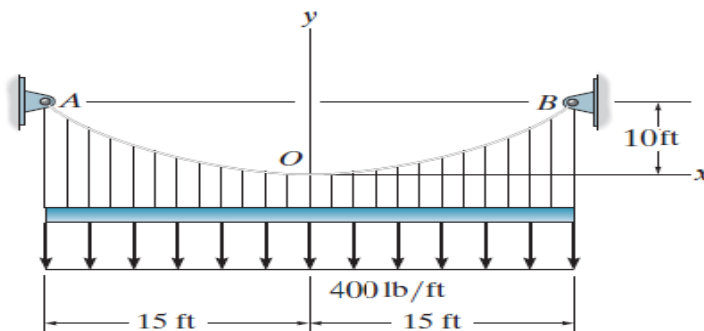
Q2: Determine the vertical displacement of free end point C on the frame shown in Figure. Take $E = 29(10^3)$ ksi and $I = 600 \text{ in}^4$ for both members. Use method of **Virtual Work**.



Q3: Determine the slope and displacement at point B. Assume the support at A is a pin and C is a roller. Take $E = 200 \text{ GPa}$, $I = 60(10)^6 \text{ mm}^4$. Use **Castigliano's Theorem**.



Q4: The cable is subjected to the uniform loading. If the slope of the cable at point O is zero, determine the equation of the curve and the force in the cable at O and B.



Q4: The three-hinged spandrel arch is subjected to the uniform load of 30 kN/m. Determine the internal moment in the arch at point D.

