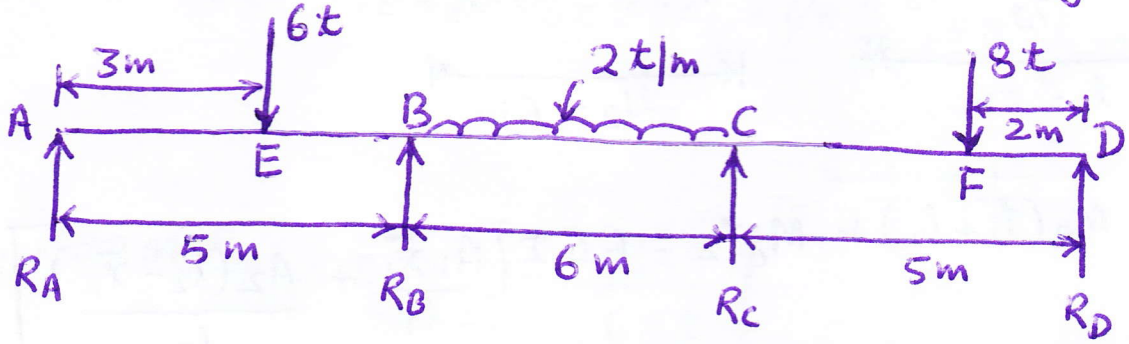
Using continuity condition i.e. $\theta_{BA} = \theta_{BC}$, the three moment equation can be derived as:

$$M_A\left(\frac{l_1}{I_1}\right) + 2M_B\left(\frac{l_1}{I_1} + \frac{l_2}{I_2}\right) + M_C\left(\frac{l_2}{I_2}\right) = 6E\left[\frac{A_1\bar{x}_1}{l_1} + \frac{A_2(l_2-\bar{x}_2)}{l_2}\right]$$

If $I_1 = I_2 = I$ ← Moment of Inertia, then

$$M_A l_1 + 2M_B(l_1+l_2) + M_C l_2 = 6EI\left[\frac{A_1\bar{x}_1}{l_1} + \frac{A_2(l_2-\bar{x}_2)}{l_2}\right]$$

Example: For the beam shown below, find the reactions at supports and bending moments at intermediate supports B & C. Take uniform flexural rigidity.



Solution: