

Submission Date:

**ASSIGNMENT 2**

1. *Illustrate* the shear force and bending moment diagram for the cantilever beam shown below (Figure 1).

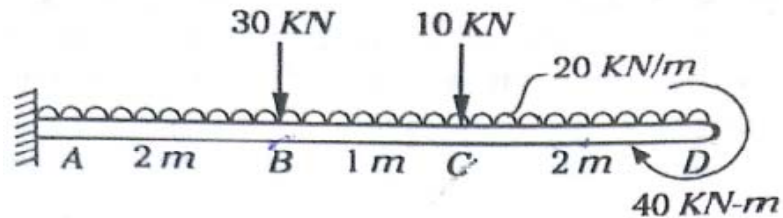


Figure 1

2. *Illustrate* the shear force and bending moment diagram for the overhanging beam shown in Figure 2, Also locate point of contraflexure, if any.

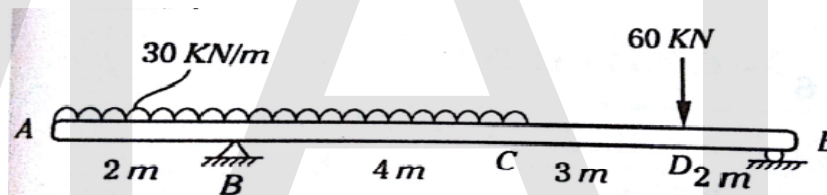


Figure 2

3. A cantilever with rectangular section (depth is twice the width) is subjected to forces as shown in Figure 3. *Determine* the section of cantilever, taking yield stress for the cantilever material as  $210 \text{ MN/m}^2$  and factor of safety as 3.

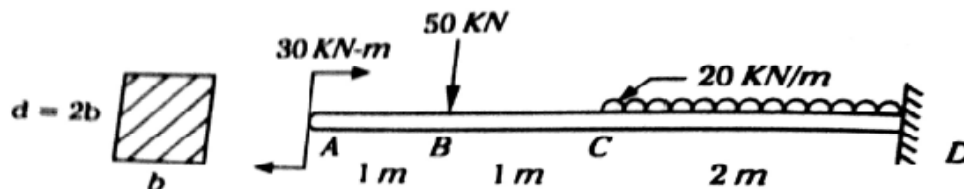


Figure 3

4. A simply supported beam with 'T' section (flange 160 mm x 15 mm, web 15 mm x 160 mm) is subjected to forces as shown in Figure 4. *Determine* the shear stress and bending stress distribution along the depth of section subjected to maximum shear force and bending moment, respectively.

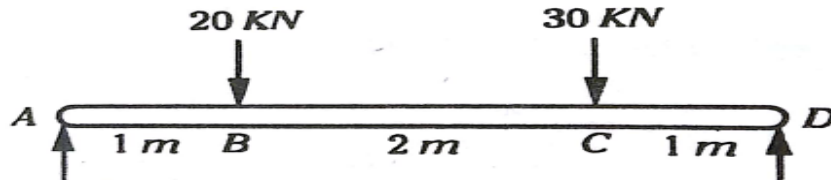


Figure 4

5. *Determine* the slope and deflection at the point B, C and D for the cantilever beam shown in Figure 1. Take  $EI = 11 \times 10^4 \text{ kN-m}^2$ .

6. *Determine* the deflection at the point A and maximum deflection induced in the beam shown in Figure 2. Take  $E = 2.1 \times 10^5 \text{ N/mm}^2$  and  $I = 95 \times 10^7 \text{ mm}^4$ .