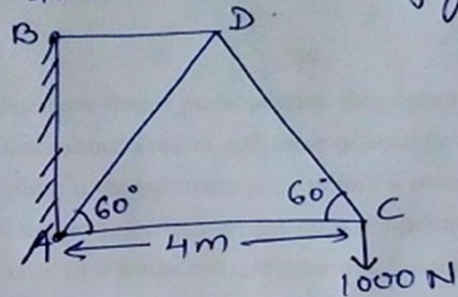


Q → Determine the forces in all the members of a cantilever truss shown in figure.



Solⁿ. Apply joint method

At joint C

$$\sum H = 0$$

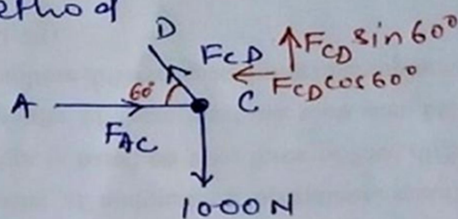
$$F_{AC} = F_{CD} \cos 60^\circ \quad \text{--- (1)}$$

$$\sum V = 0$$

$$F_{CD} \sin 60 = 1000$$

$$F_{CD} = 1000 / \sin 60 = 1154.7 \text{ N}$$

$$\boxed{F_{CD} = 1154.7 \text{ N}} \text{ (Tensile)}$$



From eqn (1)

$$F_{AC} = F_{CD} \cos 60$$

$$F_{AC} = 1154.7 \cos 60$$

$$\boxed{F_{AC} = 577.35 \text{ N}} \text{ Tensile}$$

Now At joint D

$$\sum H = 0$$

$$F_{BD} = F_{AD} \sin 30 + F_{CD} \sin 30$$

$$F_{BD} = F_{AD} \sin 30 + 1154.7 \sin 30 \quad \text{--- (2)}$$

$$\sum V = 0$$

$$F_{AD} \cos 30 = F_{CD} \cos 30$$

$$\boxed{F_{AD} = 1154.7 \text{ N}} \text{ Compressive}$$

from eqn (2)

$$F_{BD} = 1154.7 \sin 30 + 1154.7 \sin 30$$

$$\boxed{F_{BD} = 1154.7 \text{ N}} \text{ Tensile. Ans}$$

