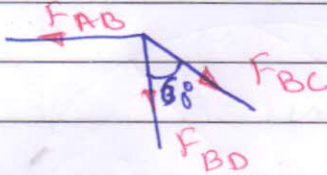


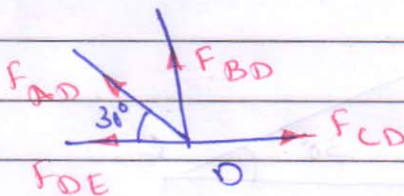
Joint B

$$\sum F_x = 0$$

$$\begin{aligned} F_{AB} &= F_{BC} \sin 30^\circ \\ &= 19.62 \text{ m} \sin 60^\circ \\ &= 17 \text{ m N} \end{aligned}$$

$$\sum F_y = 0$$

$$\begin{aligned} F_{BD} + F_{BC} \cos 30^\circ &= 0 \\ F_{BD} &= -(19.62 \text{ m}) \cos 60^\circ \\ &= -9.81 \text{ m N} \end{aligned}$$

Joint D

$$\sum F_y = 0$$

$$\begin{aligned} F_{AD} \sin 30^\circ + F_{BD} &= 0 \\ F_{AD} &= \frac{-(-9.81) \text{ m}}{\sin 30^\circ} \\ &= +19.62 \text{ m N} \end{aligned}$$

$$\sum F_x = 0$$

$$\begin{aligned} F_{DE} + F_{AD} \cos 30^\circ &= F_{CD} \\ F_{DE} &= -17 \text{ m} - (19.62) \cos 30^\circ \\ &= -34 \text{ m N} \end{aligned}$$