What is the magnitude of magnetic force per unit length on a wire carrying a current of 8 A and making an angle of 30° with the direction of a uniform magnetic field of 0.15 T?

Current in the wire, I = 8 A

Magnitude of the uniform magnetic field, B = 0.15 T

Angle between the wire and magnetic field, $\theta = 30°$.

Magnetic force per unit length on the wire is given as: $F = BI\sin\theta$

$= 0.15 \times 8 \times 1 \times \sin 30°$

$= 0.6\ \text{N m}^{-1}$

Hence, the magnetic force per unit length on the wire is $0.6\ \text{N m}^{-1}$.