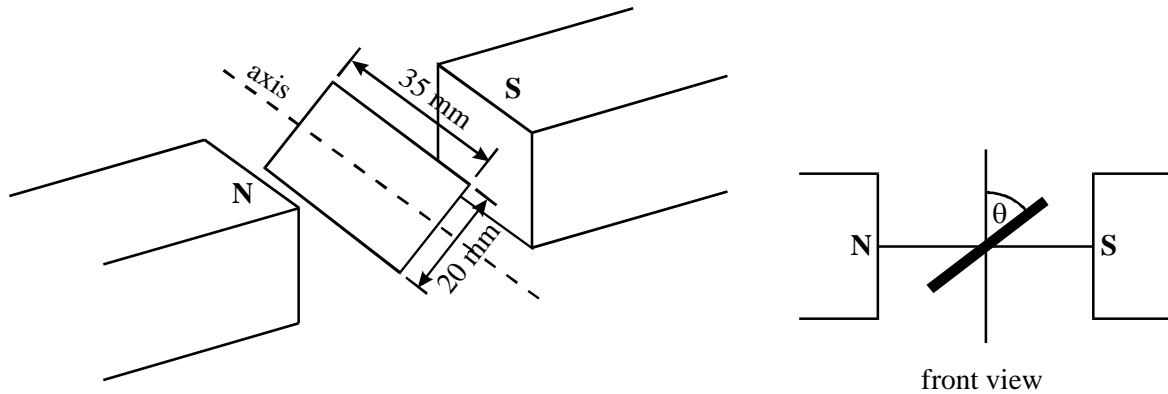# Flux Linkage

1. A rectangular coil measuring 20 mm by 35 mm and having 650 turns is rotating about a horizontal axis which is at right angles to a uniform magnetic field of flux density 2.5×10^{-3} T. The plane of the coil makes an angle θ with the vertical, as shown in the diagrams.

front view

(a) State the value of θ when the magnetic flux through the coil is a minimum.

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(1)

(b) Calculate the magnetic flux passing through the coil when θ is 30°.

....

....

(2)

(c) What is the maximum *flux linkage* through the coil as it rotates?

....

....

....

(2)

(d) A timer is started when the flux linkage is maximum. The coil is rotated at a frequency of 10Hz. Sketch a graph of flux linkage against time showing at least two rotations of the coil: