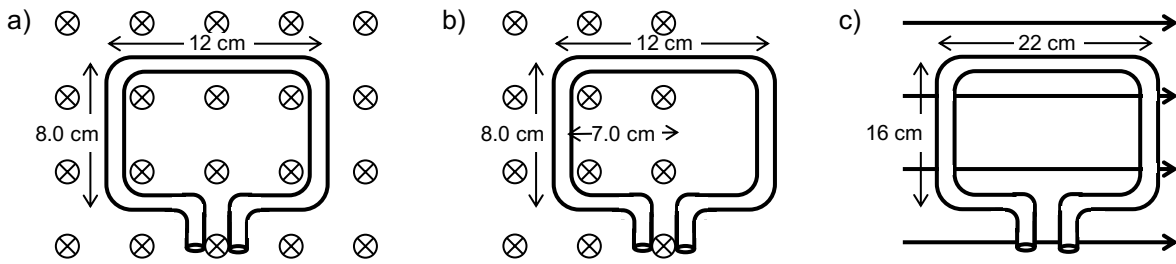
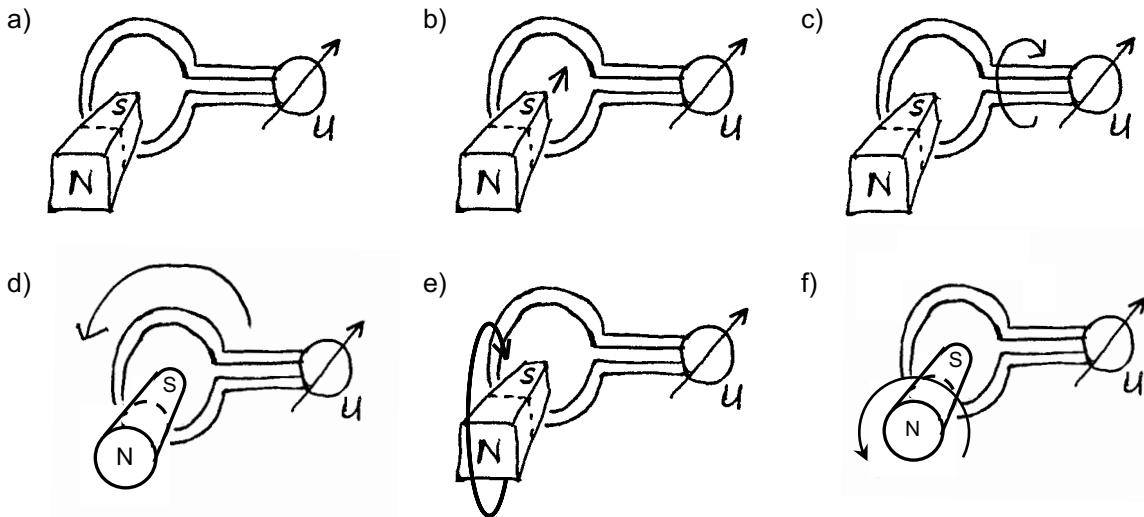


1. Determine the magnetic flux through the area of the loop of wire. ( $B = 0.34 \text{ T}$ )



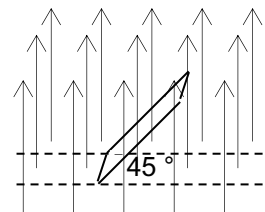
2. The magnetic flux through a loop of wire ( $A = 76 \text{ cm}^2$ ) is  $2.53 \cdot 10^{-5} \text{ Wb}$ . The uniform magnetic field is perpendicular to the face of the loop. Calculate the magnitude of the magnetic field.

3. In which ones of the situations a) to f) is it possible to measure a voltage between the ends of the loop of wire? Give reasons for your answers.

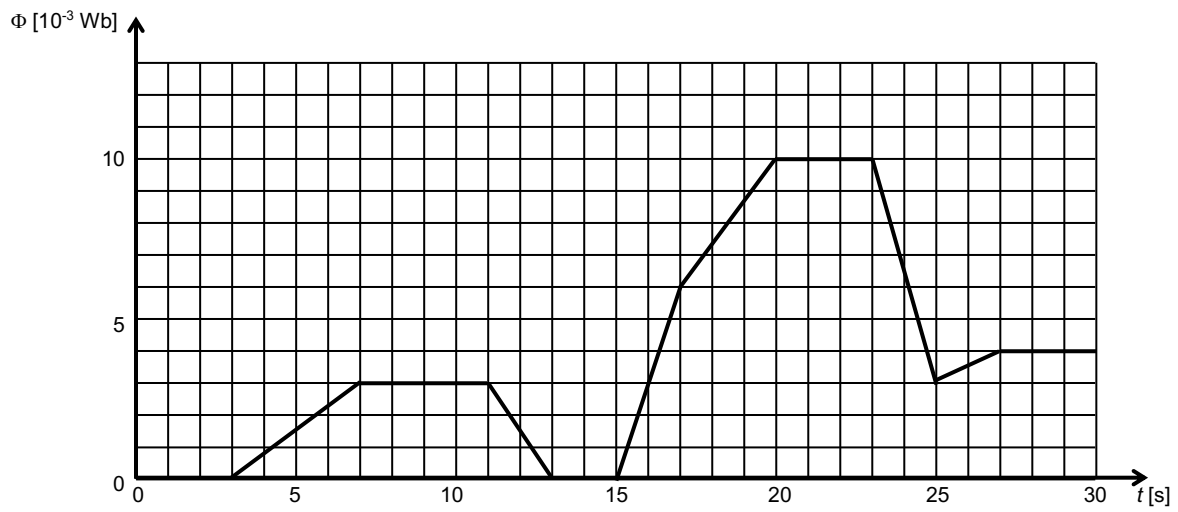


4. A loop of wire ( $A = 4.5 \text{ cm}^2$ ) is perpendicular to a uniform magnetic field ( $B = 66.5 \text{ mT}$ ).  
 a) What is the magnitude of the induced voltage, if the area is reduced to  $2.5 \text{ cm}^2$  within  $0.22 \text{ s}$ ?  
 b) What is the magnitude of the induced voltage, if the magnetic field is turned off within  $20 \text{ ms}$ ?

5. Here's a square loop of wire with side length  $37.5 \text{ cm}$ . It is inclined by  $45.0^\circ$  in a uniform magnetic field of  $25.0 \text{ mT}$ . Calculate the magnetic flux through the loop of wire.



6. Pictured below is a graph that shows how the magnetic flux through a loop of wire changes over time.  
Determine the induced voltage in each phase (eleven in total).



solutions:

1. a)  $3.3 \cdot 10^{-3}$  Wb      b)  $1.9 \cdot 10^{-3}$  Wb      c) 0  
 2. 3.3 mT  
 4. a)  $6.0 \cdot 10^{-5}$  V      b) 1.5 mV  
 5.  $2.49 \cdot 10^{-3}$  Wb  
 6.  $U_1 = 0$ ,  $U_2 = -0.75$  mV,  $U_3 = 0$ ,  $U_4 = 1.5$  mV,  $U_5 = 0$ ,  $U_6 = -3.0$  mV,  $U_7 = -1.3$  mV,  $U_8 = 0$ ,  
 $U_9 = 3.5$  mV,  $U_{10} = -0.50$  mV,  $U_{11} = 0$