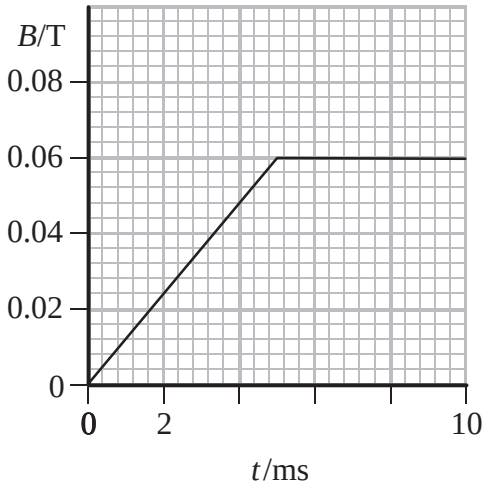
1 A coil of 300 turns each of area 1.5×10^{-4} m^2 is placed in a magnetic field with its plane at right angles to the field. The graph shows how the magnetic flux density B of the field varies with time t.



The e.m.f. induced in the coil during the first 5 ms is

☒ **A** 5.4×10^{-1} V

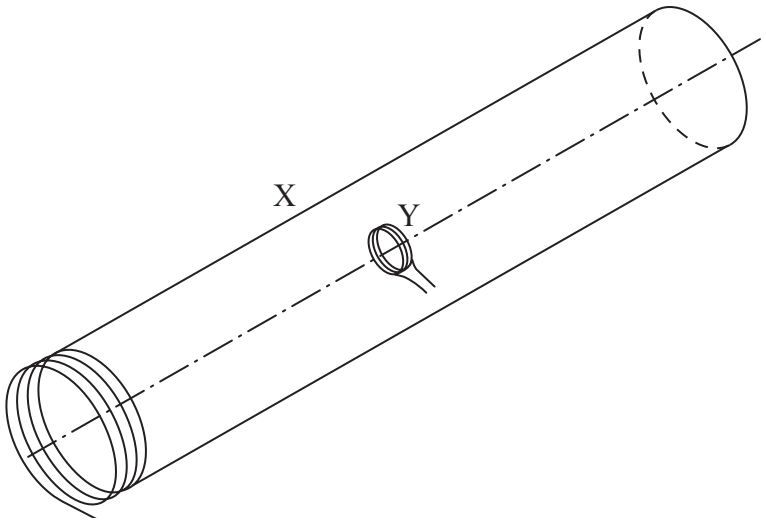
☒ **B** 4.5×10^{-2} V

☒ **C** 1.8×10^{-3} V

☒ **D** 5.4×10^{-4} V

(Total for Question = 1 mark)

2 The diagram represents two coils. Coil X has 1000 turns and a cross-sectional area of 10 cm^2. It is carrying a current which produces a field of magnetic flux density 0.002 T. Coil Y has 50 turns and a cross-sectional area of 4 cm^2.



The flux linkage with coil Y is

☒ **A** 0.4 Wb

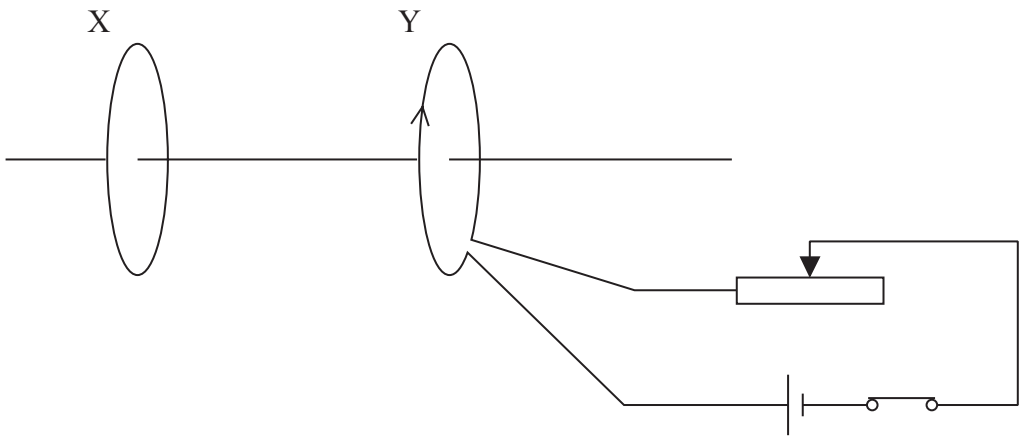
☒ **B** 2×10^{-3} Wb

☒ **C** 4×10^{-5} Wb

☒ **D** 8×10^{-7} Wb

(Total for Question = 1 mark)

3 The diagram represents two identical coils X and Y. The planes of both coils are parallel and their centres lie on a common axis.



Coil Y is connected to a cell, a variable resistor and a closed switch.

Under which of the following circumstances would a current be induced in coil X in the same direction as the current shown in coil Y?

☒ **A** The coils are moved closer together.

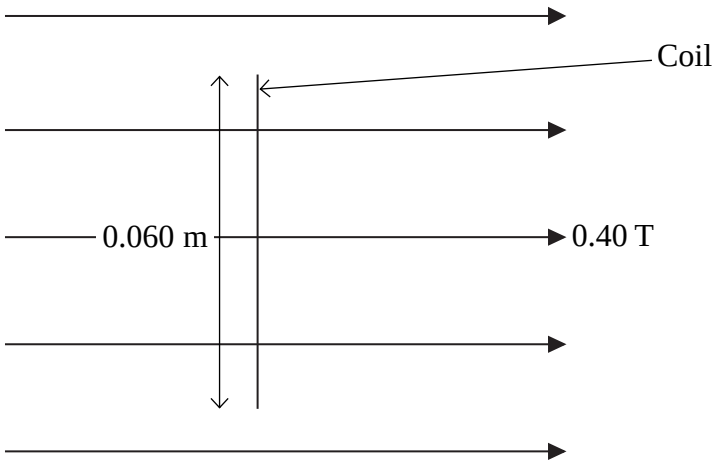
☒ **B** The switch is opened.

☒ **C** The resistance of the variable resistor is decreased.

☒ **D** No change is made to the arrangement.

(Total for Question = 1 mark)

4 A 50 turn square coil, side 0.060 m, is placed in a magnetic field of flux density 0.40 T. The plane of the coil is at right angles to the direction of the magnetic field.



The flux linkage with the coil is

☒ **A** 0.072 Wb

☒ **B** 0.45 Wb

☒ **C** 1.2 Wb

☒ **D** 333 Wb

(Total for Question = 1 mark)