Electromagnetic Induction
Question Paper

Level	A Level
Subject	Physics
Exam Board	Edexcel
Topic	Electric & Magnetic Fields
Sub Topic	Electromagnetic Induction
Booklet	Question Paper
Paper Type	Multiple Choice

Time Allowed: **5 minutes**

Score: **/4**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

1 A coil of 300 turns each of area 1.5×10^{-4} m² 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.
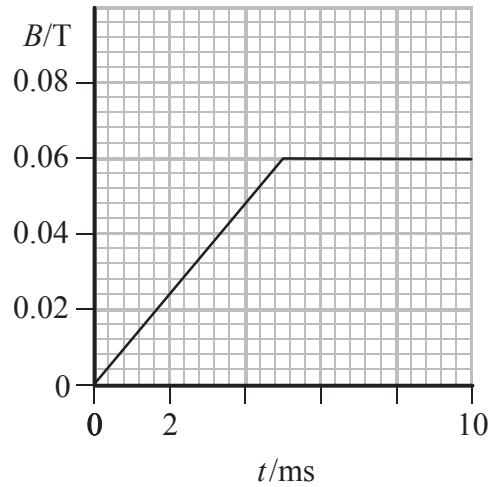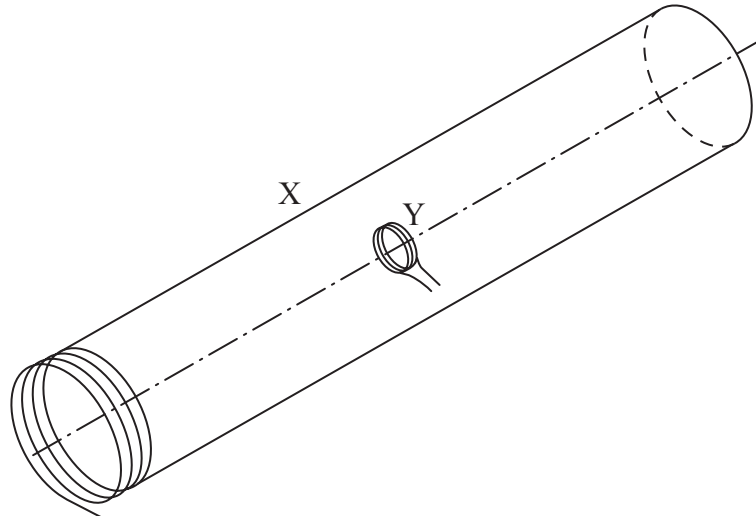

The e.m.f. induced in the coil during the first 5 ms is

☒ **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 cm². 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 cm².
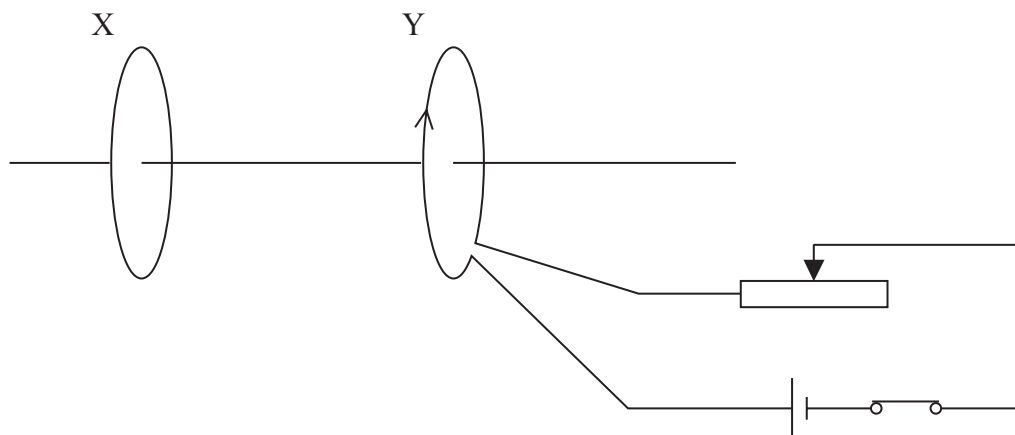

The flux linkage with coil Y is

   ☒   **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.
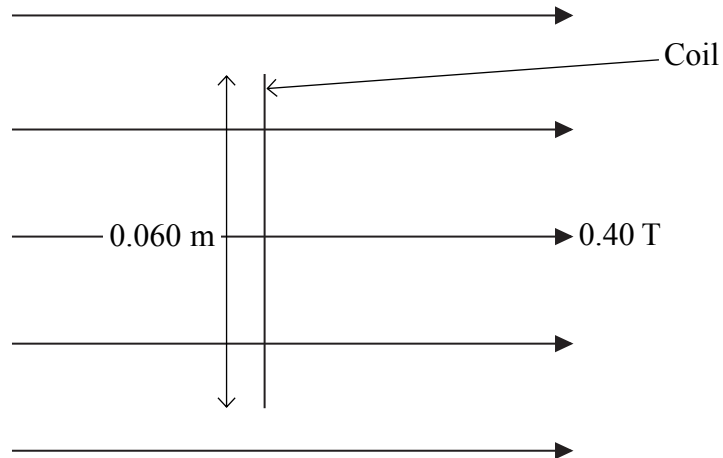
The flux linkage with the coil is

☒   **A**   0.072 Wb

☒   **B**   0.45 Wb

☒   **C**   1.2 Wb

☒   **D**   333 Wb

(Total for Question = 1 mark)