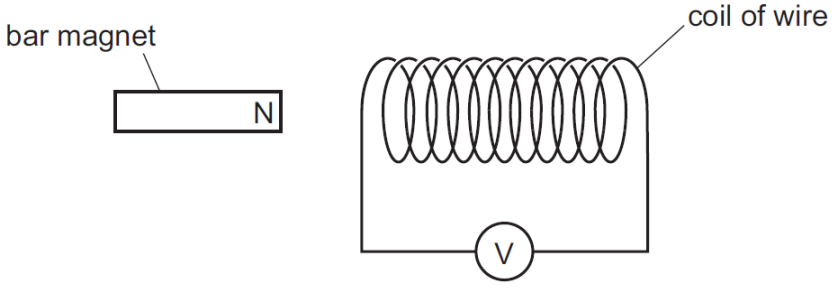
Electromagnetic Induction – 2019 June

1. 0625/11/M/J/19/No.36

A bar magnet is held near a coil of wire. The coil is connected to a sensitive voltmeter.



The N-pole of the magnet is moved quickly towards the coil. The voltmeter shows a reading of +10 mV.

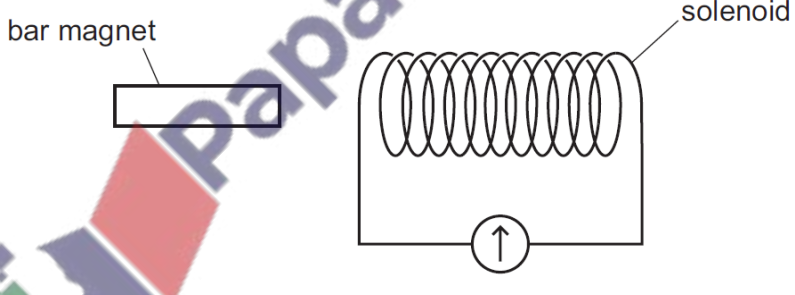
The N-pole of the magnet is then moved slowly away from the same end of the coil. The reading on the voltmeter is observed.

Which voltmeter reading is possible?

A –15 mV **B** –5 mV **C** 0 mV **D** +5 mV

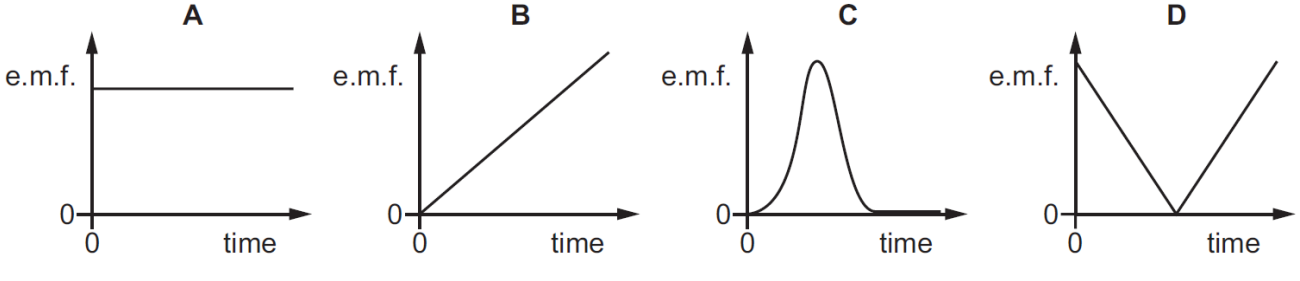
2. 0625/12/M/J/19/No.36

A bar magnet is held near a solenoid. The coil is connected to a galvanometer.



The magnet is moved into the coil of wire and then held stationary inside the coil.

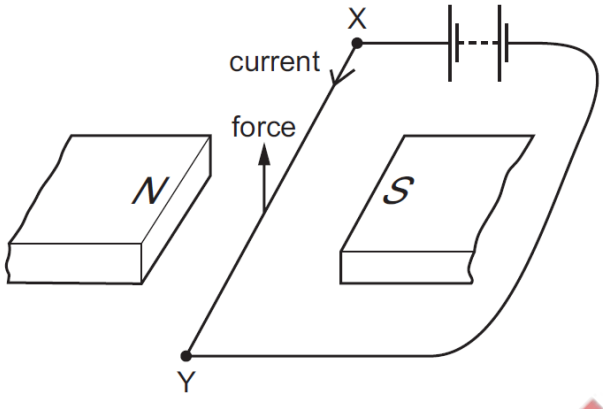
Which graph shows how the induced electromotive force (e.m.f.) varies with time?



3. 0625/12/M/J/19/No.37

A wire XY lies between the poles of a magnet.

The diagram shows the upward force on the wire XY caused when there is an electric current in the direction XY as shown.



Three tests are made using this apparatus.

1 The current direction is reversed.

2 The N and S poles are swapped around.

3 The current is switched off.

Which will result in **no change** in the size of the force on the wire?

A 1 and 2 only **B** 1 only **C** 2 only **D** 3 only

4. 0625/13/M/J/19/No.37

Which device relies upon the magnetic effect of an electric current?

A fuse

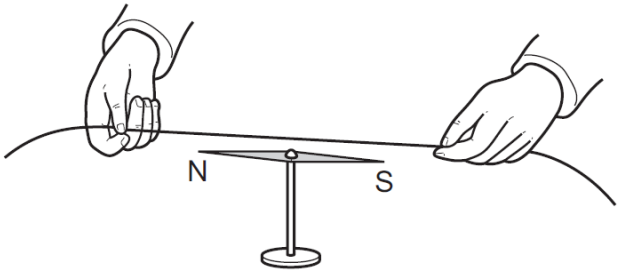
B relay

C thermistor

D variable resistor

5. 0625/13/M/J/19/No.36

In an experiment, a wire is held above a compass needle as shown.



An electric current is switched on in the wire and the compass needle is deflected.

Which row explains why this happens and then describes what happens when the current is reversed?

	why this happens	what happens when the current is reversed
A	there is a magnetic field inside the wire	the compass needle deflects in the opposite direction
B	there is a magnetic field inside the wire	there is no effect on the compass needle
C	there is a magnetic field around the wire	the compass needle deflects in the opposite direction
D	there is a magnetic field around the wire	there is no effect on the compass needle

6. 0625/21/M/J/19/No.36

What is the purpose of the commutator in a d.c. electric motor?

A to control the speed at which the motor rotates

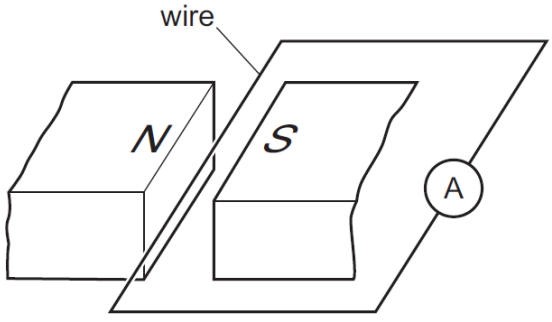
B to reverse the direction of the voltage across the power supply every half-turn

C to reverse the direction of the current in the motor coil every half-turn

D to reverse the direction of spin of the motor coil every half-turn

7. 0625/13/M/J/19/No.37

The diagram shows a wire between two magnetic poles. The wire is connected in a circuit with an ammeter.



The wire is moved downwards, towards the bottom of the page. A current is induced in the wire.

In which direction is the force on the wire caused by this current?

A towards the bottom of the page

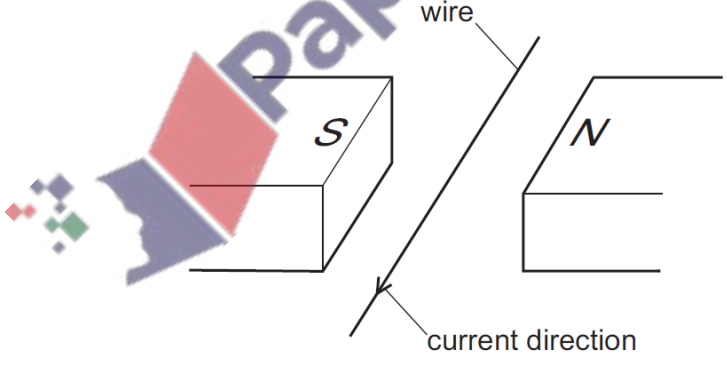
B towards the left of the page

C towards the right of the page

D towards the top of the page

8. 0625/22/M/J/19/No.36

The diagram shows a current-carrying wire placed between two magnetic poles. The current is in the direction shown.



What is the direction of the force on the wire?

A towards the bottom of the page

B towards the top of the page

C towards the left-hand side of the page

D towards the right-hand side of the page

9. 0625/22/M/J/19/No.37

Diagram 1 shows an a.c. generator. The coil is turning as shown.

diagram 1

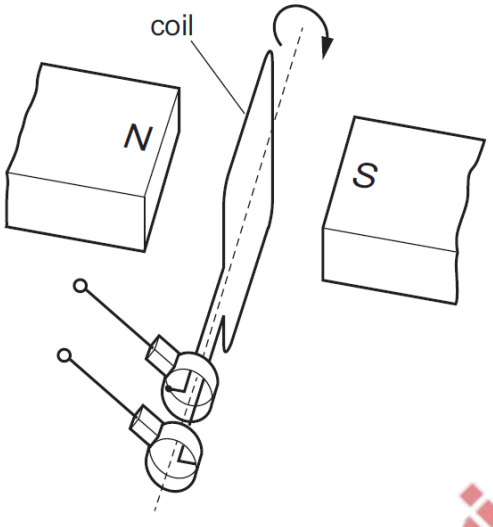
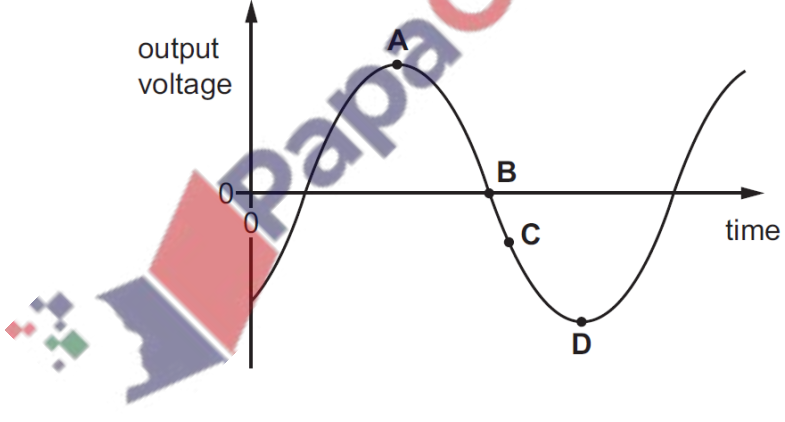


Diagram 2 shows the output voltage produced by the generator as the coil turns.

Which point on diagram 2 shows the voltage induced when the coil is moving through the position shown in diagram 1?

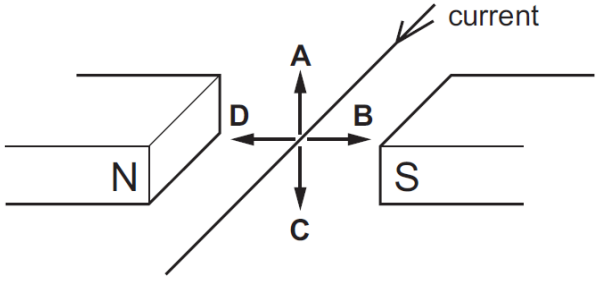
diagram 2



10. 0625/23/M/J/19/No.37

A conductor carrying a current is placed in a magnetic field.

In which direction does the force on the conductor act?



11. 0625/12/F/M/19/No.34

A student wishes to demonstrate electromagnetic induction.

He has a magnet and connecting wires.

Which other apparatus does he need?

	voltmeter	battery
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

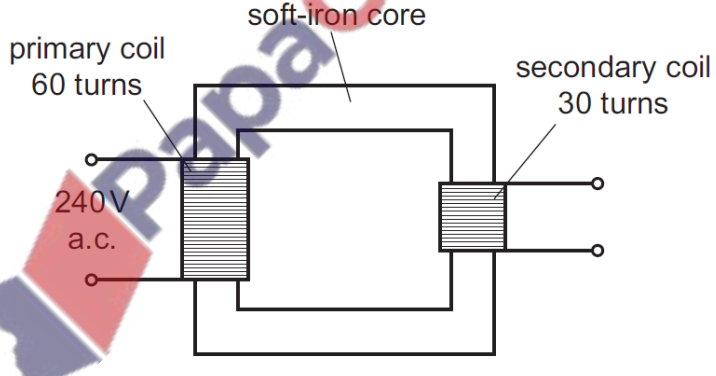
key

✓ = needed

✗ = not needed

12. 0625/12/F/M/19/No.35

The diagram shows a transformer connected to a 240 V a.c. supply.

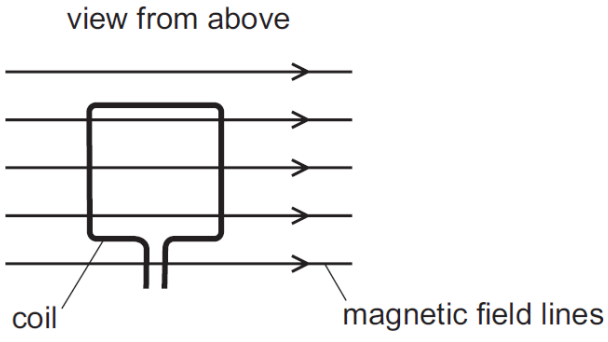


What is the potential difference across the secondary coil of the transformer?

A 30 V **B** 120 V **C** 240 V **D** 480 V

13. 0625/12, 22/F/M/19/No.36, 37

A current-carrying coil is placed in a magnetic field.



Which effect does the coil experience?

A a change in shape

B a change in weight

C a resultant force

D a turning effect