Electromagnetic induction – 2019 Nov

1. 0625/11/O/N/19/No.35

A student investigates the output voltage induced across a coil of wire by a bar magnet.

When will the induced voltage have the greatest value?

A The student slowly moves the bar magnet into the coil of wire.

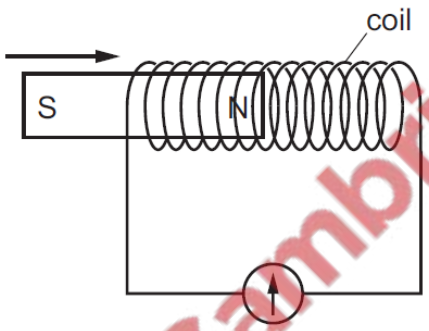
B The student leaves the bar magnet stationary in the coil of wire.

C The student quickly removes the bar magnet from the coil of wire.

D The student places the bar magnet at rest outside the coil of wire.

2. 0625/12,22/O/N/19/No.35

The N-pole of a magnet is moved into a coil of wire connected to a galvanometer.



The needle of the galvanometer moves.

Which situation **must** give a smaller galvanometer reading?

A Use a coil with fewer turns and a stronger magnet.

B Use a coil with fewer turns and a weaker magnet.

C Use a coil with more turns and a stronger magnet.

D Use a coil with more turns and a weaker magnet.

3. 0625/13/O/N/19/No.35

A step-up transformer produces a 60 V a.c. output from a 12 V a.c. input.

There are 50 turns on the secondary coil.

How many turns are there on the primary coil?

A 5 **B** 10 **C** 50 **D** 250

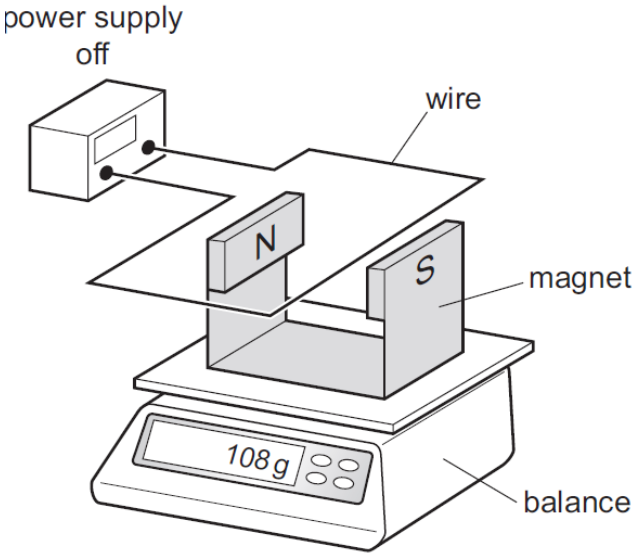
4. 0625/13/O/N/19/No.36

A student uses a balance, a magnet and a power supply to determine the force on a wire in a magnetic field.

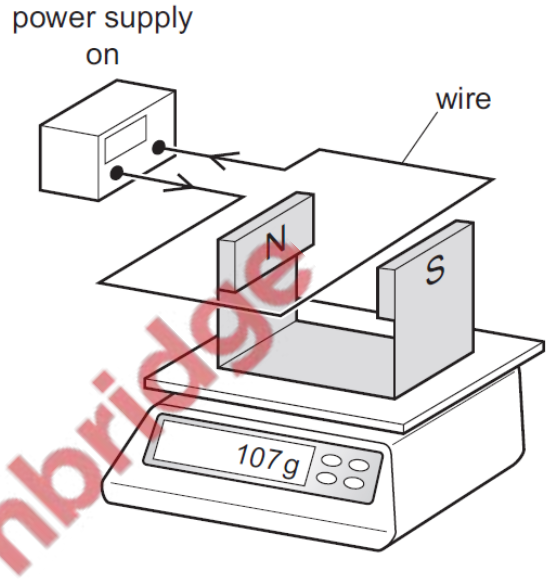
The wire is held between the poles of the magnet.

The student switches on the power supply.

The diagrams show the readings with and without a current in the wire.



no current in wire



current in wire

The student reverses the current in the wire. The magnitude of the current does not change.

What is the new reading on the balance?

A 106 g **B** 107 g **C** 108 g **D** 109 g

5. 0625/21/O/N/19/No.36

Diagram 1 shows a coil of wire P between the poles of a magnet. The ends of coil P are connected to a battery by slip rings.

Diagram 2 shows a coil of wire Q between the poles of a different magnet. The ends of coil Q are connected to a battery by a split-ring commutator.

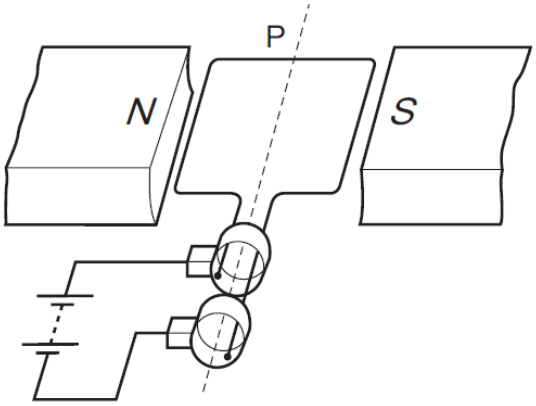


diagram 1

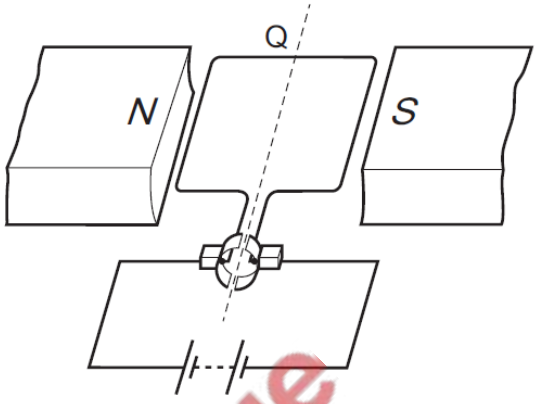


diagram 2

What happens to coils P and Q?

	coil P	coil Q
A	continuously turns anticlockwise	makes one quarter turn anticlockwise then stops
B	continuously turns clockwise	makes one quarter turn clockwise then stops
C	makes one quarter turn anticlockwise then stops	continuously turns anticlockwise
D	makes one quarter turn clockwise then stops	continuously turns clockwise

6. 0625/22/O/N/19/No.36

A step-down transformer is 100% efficient. It has an input voltage of 240 V a.c. and an output voltage of 60 V a.c.

The current in the primary coil is 0.50 A.

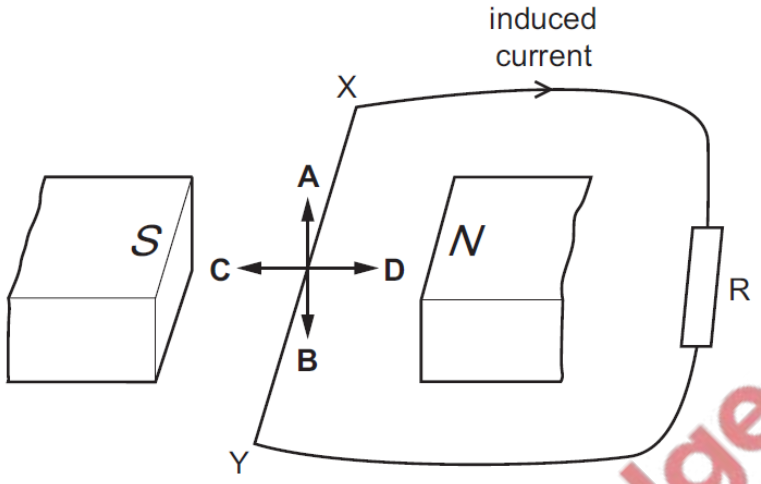
What is the current in the secondary coil?

A 0.13 A **B** 0.50 A **C** 2.0 A **D** 8.0 A

7. 0625/23/O/N/19/No.34

A wire XY is connected to a resistor R. The wire is moved in the magnetic field between two magnetic poles.

In which direction must the wire be moved so that the induced current is in the direction shown?



8. 0625/23/O/N/19/No.35

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9. 0625/23/O/N/19/No.36

An a.c. generator contains a coil that rotates at a rate of 4500 revolutions per minute.

What is the frequency of the alternating current?

A 1.25 Hz **B** 75 Hz **C** 150 Hz **D** 4500 Hz