Electromagnetic Effects

Question Paper 3

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Electromagnetic Effects
Booklet	Question Paper 3

Time allowed: **20 minutes**

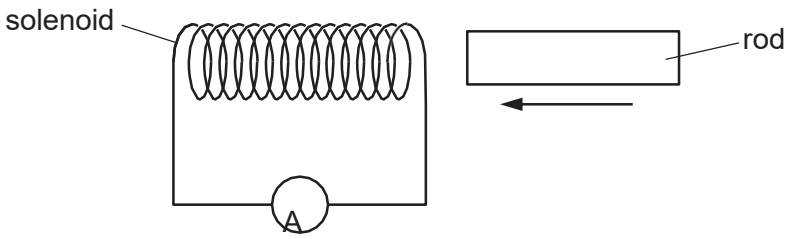
Score: **/16**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

A solenoid is connected to a very sensitive ammeter. A rod is inserted into one end of the solenoid. The ammeter shows that there is a small electric current in the circuit while the rod is moving.



Which rod is being inserted?

A. a heated copper rod

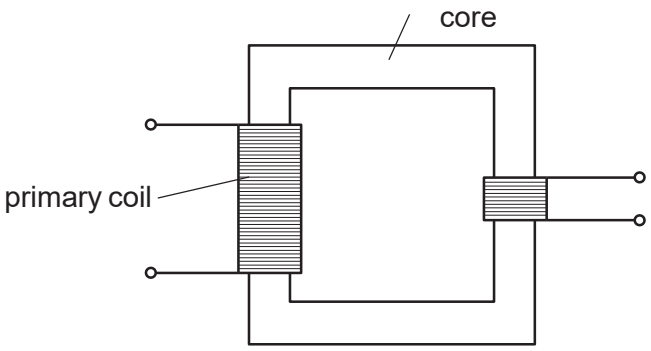
B. a magnetised steel rod

C. an uncharged nylon rod

D. a radioactive uranium rod

Question 2

The diagram shows the structure of a transformer.

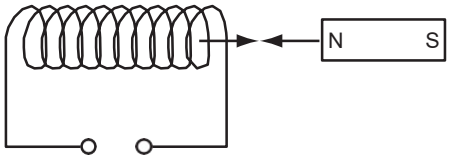


Which row shows a suitable material for the primary coil and a suitable material for the core?

	primary coil	core
A	copper	copper
B	copper	iron
C	iron	copper
D	iron	iron

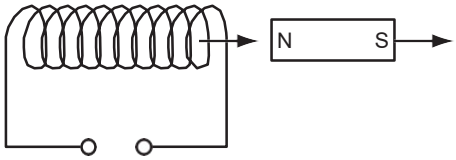
Which diagram shows a movement that will **not** produce the changing magnetic field needed to induce an e.m.f. in the coil?

A



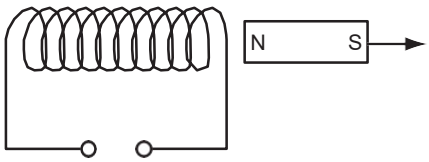
moving a magnet and a coil towards each other at the same speed

B



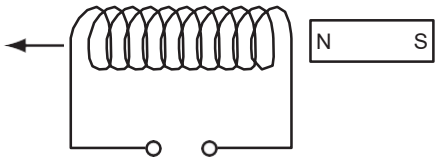
moving a magnet and a coil in the same direction at the same speed

C



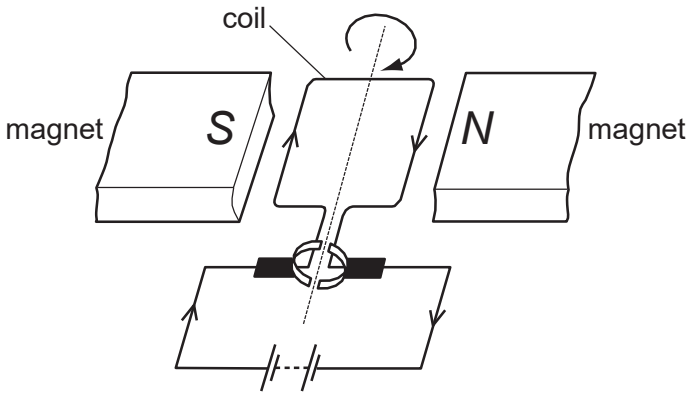
moving a magnet away from a fixed coil

D



moving a coil away from a fixed magnet

The diagram shows a simple d.c. electric motor which is rotating.



Which change will make the motor rotate more quickly?

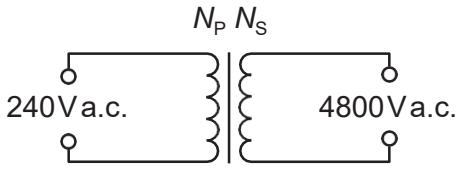
A. increasing the number of turns on the coil

B. removing the magnets

C. reversing the battery

D. reversing the polarity of the magnets

A transformer is needed to convert a supply of 240 V a.c. into 4800 V a.c.



Which pair of coils would be suitable for this transformer?

	number of turns on primary coil N_P	number of turns on secondary coil N_S
A	50	1000
B	240	48000
C	480	24
D	2000	100

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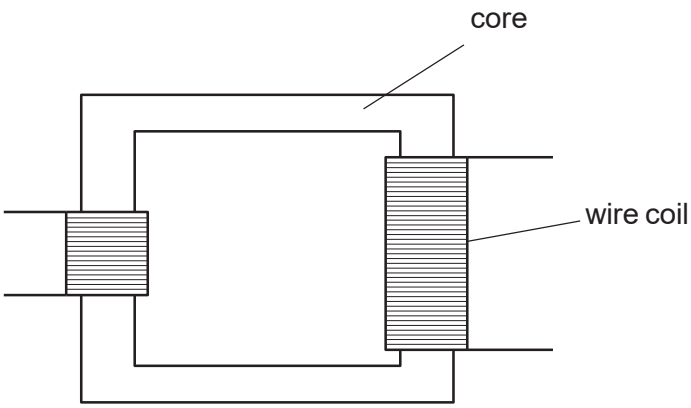
The diagram shows a transformer.



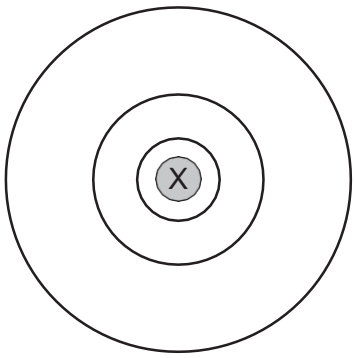
Which materials are suitable to use in its construction?

	core	wire coil
A	copper	iron
B	iron	copper
C	steel	copper
D	steel	iron

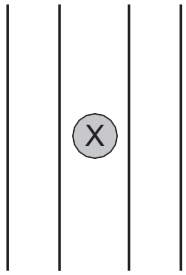
The direction of the current flowing in a straight wire X is into the paper.

Which diagram shows the shape of the magnetic field pattern around the wire?

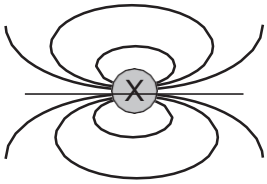
A



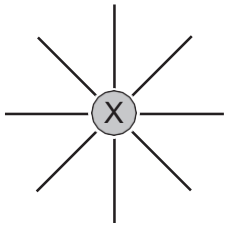
B



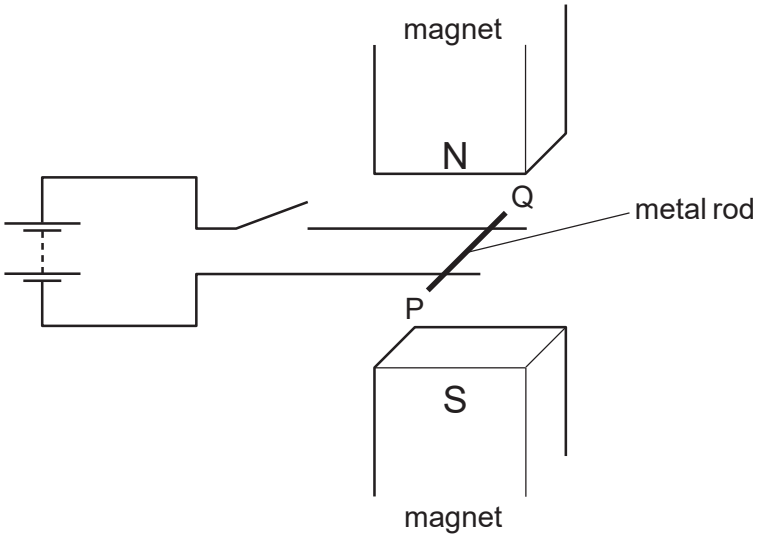
C



D



A metal rod PQ rests on two horizontal metal wires that are attached to a battery. The rod lies between the poles of a magnet.



When the switch is closed, the rod moves to the right.

What could be changed so that the rod moves to the left?

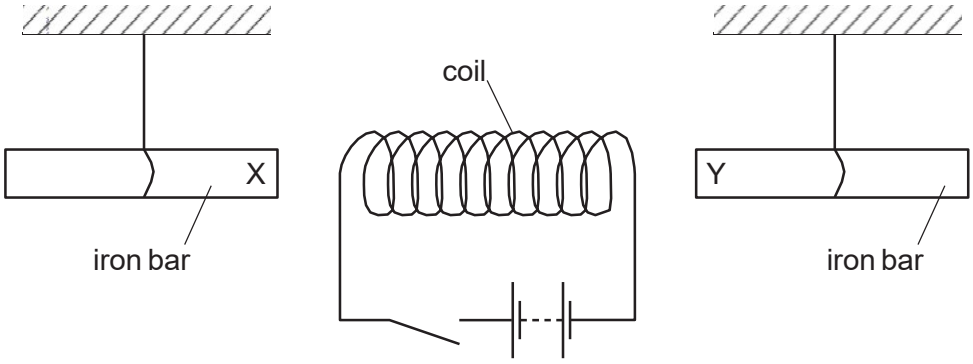
A Open the switch.

B. Reverse the battery terminals and exchange the poles of the magnet.

C. Reverse the battery terminals but without exchanging the poles of the magnet.

D. Turn the metal rod around (P and Q exchanged).

The diagram shows a coil connected to a battery and a switch. Two unmagnetised iron bars hang freely near opposite ends of the coil.



What happens to the iron bars when the switch is closed?

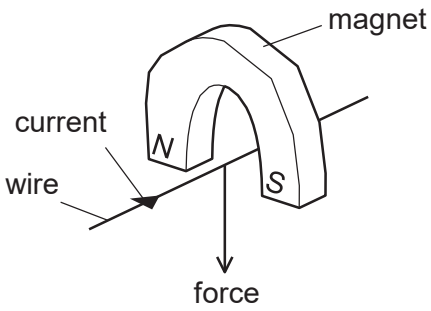
A. Both X and Y move away from the coil.

B. Both X and Y move towards the coil.

C. X moves towards the coil, Y moves away from the coil.

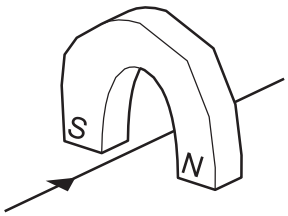
D. Y moves towards the coil, X moves away from the coil.

A wire passes between the poles of a horseshoe magnet. There is a current in the wire in the direction shown, and this causes a force to act on the wire.



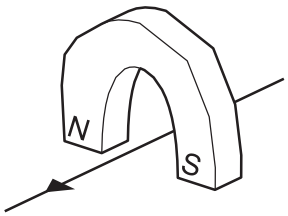
Three other arrangements, P, Q and R, of the wire and magnet are set up as shown.

P



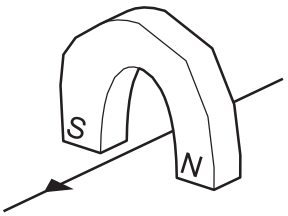
magnet turned around

Q



current direction reversed

R

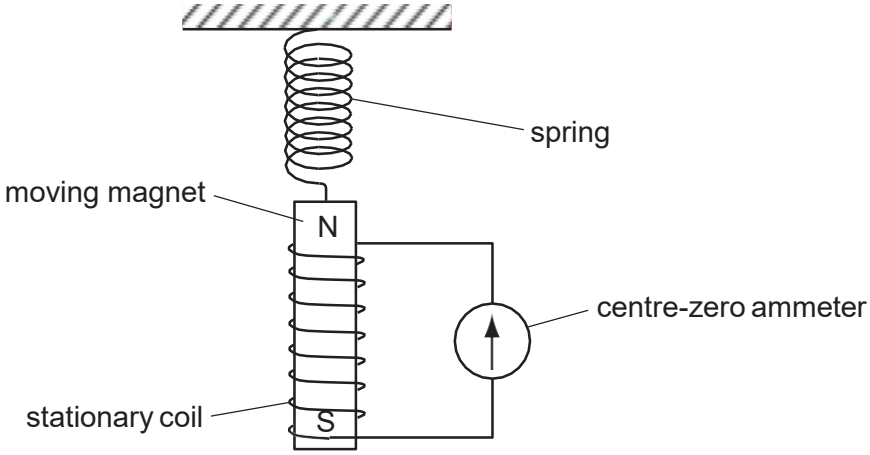


current direction reversed and magnet turned around

Which arrangement or arrangements will cause a force in the same direction as the original arrangement?

A P, Q and R B P and Q only C P only D R only

A magnet is suspended from a spring so that it can move freely inside a coil. The coil is connected to a sensitive centre-zero ammeter.



What does the ammeter show when the magnet repeatedly moves slowly up and down?

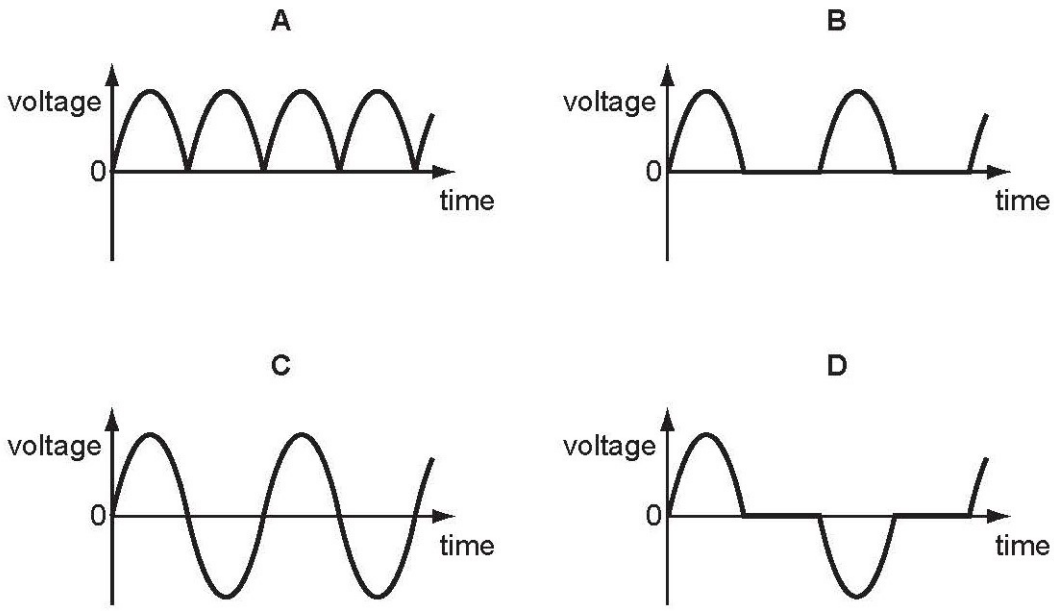
A. a reading constantly changing from left to right and right to left

B. a steady reading to the left

C. a steady reading to the right

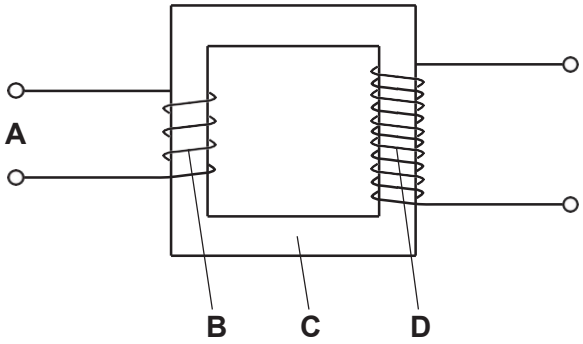
D. a steady reading of zero

Which graph shows how the output voltage varies with time for a simple a.c. generator?



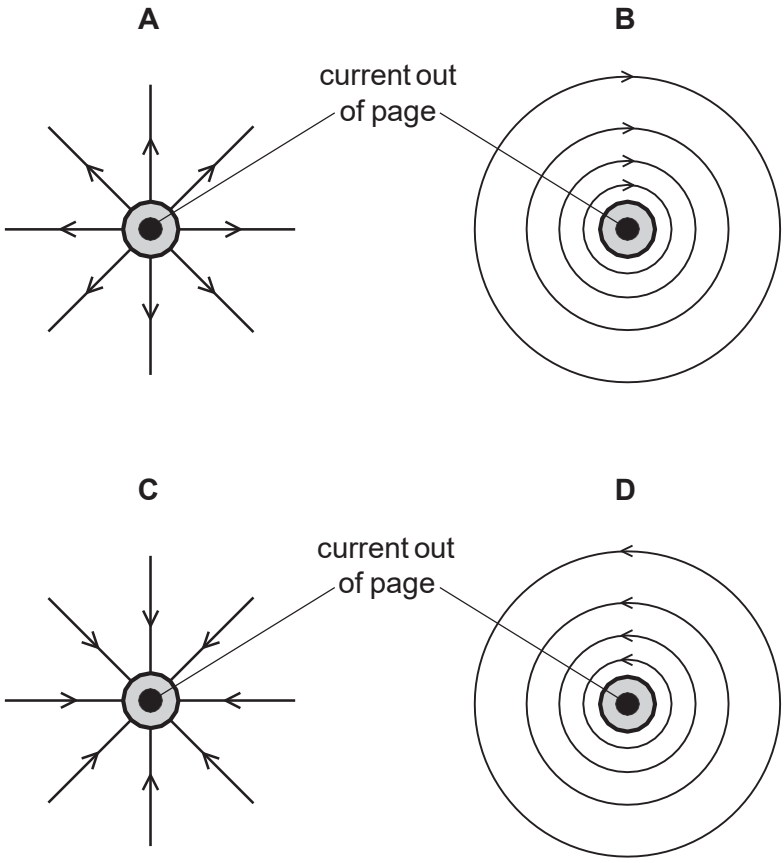
The diagram shows a simple step-down transformer used to decrease a voltage.

Which part is the primary coil?



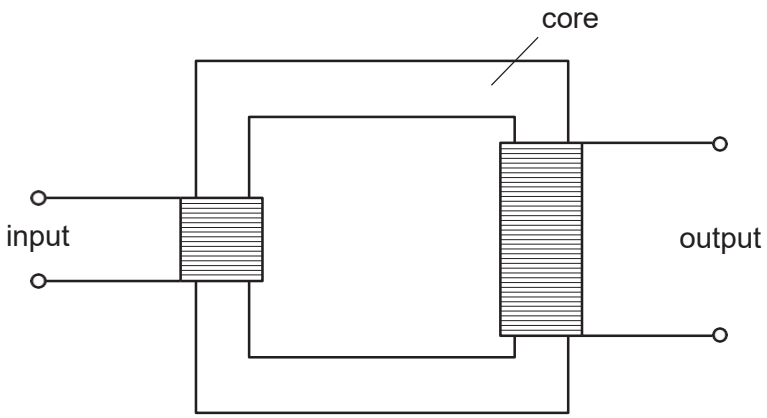
Question 14

Which diagram represents the direction of the magnetic field around a straight wire carrying a current out of the page?



Question 15

The diagram shows a simple transformer.



From which material should the core be made?

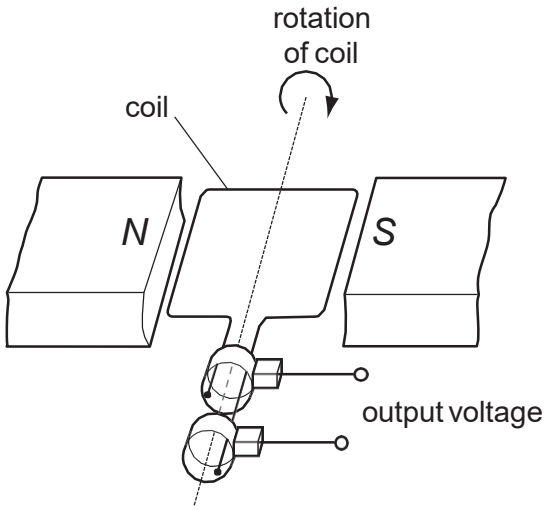
A. aluminium

B. copper

C. iron

D. steel

The diagram shows an a.c. generator.



With the coil in the position shown, the output voltage is +10 V.

When does the output voltage become –10 V?

A when the coil has turned 90°

B when the coil has turned 180°

C when the coil has turned 270°

D when the coil has turned 360°