Electromagnetic Effects

Question Paper

Course	CIE IGCSE Physics
Section	4. Electricity & Magnetism
Topic	Electromagnetic Effects
Difficulty	Hard

Time Allowed 10

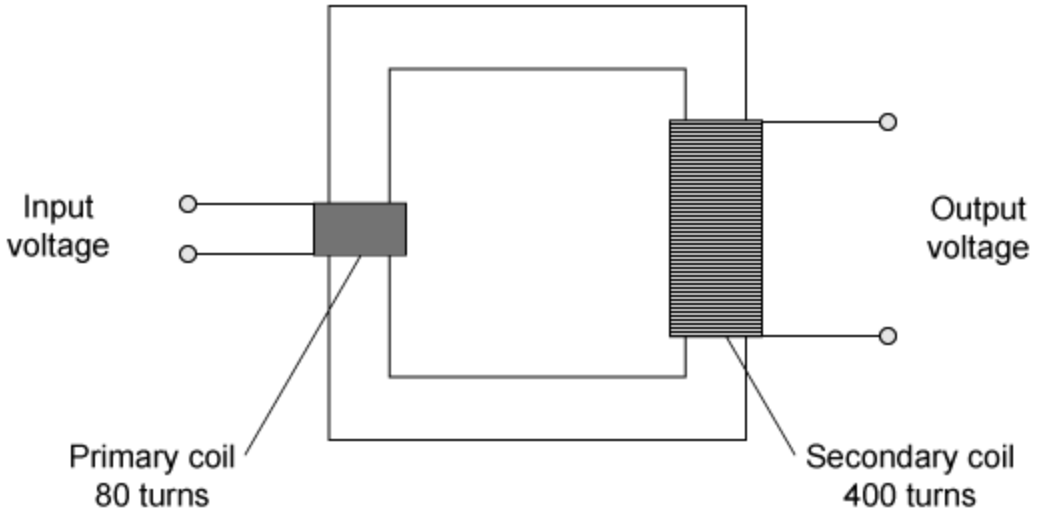
Score /7

Percentage /100

Question 1

Transformers are used to change the voltage of a power supply.

The diagram below shows a simple transformer.



If the input voltage is 48 V, what is the output voltage?

A. 2.4 V

B. 9.6 V

C. 240 V

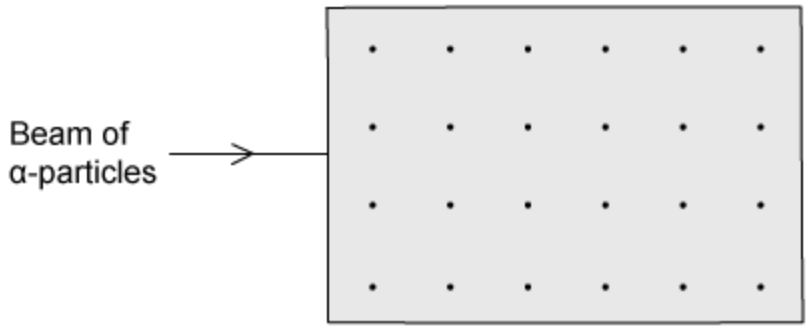
D. 667 V

[1 mark]

Question 2

Extended tier only

A magnetic field can be represented by the diagram shown below. The dots represent magnetic field lines coming out of the page.



A beam of alpha particles is directed through the field as shown above. Alpha particles, being charged, will be deflected by the field.

In which direction will the alpha particles be deflected?

A. upwards

B. downwards

C. into the page

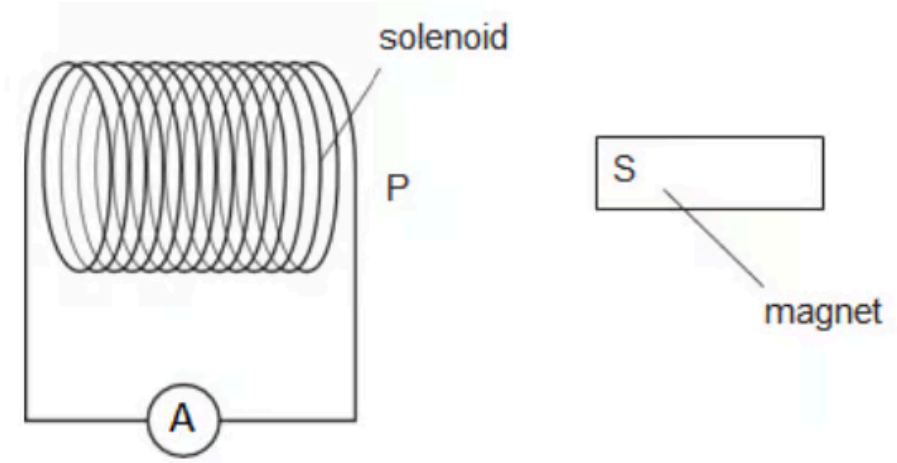
D. out of the page

[1 mark]

Question 3

Extended tier only

The south pole of a magnet is brought near to a solenoid, which is connected to an ammeter. The magnet is then pulled away again.



As the magnet is moved towards point P the needle on the ammeter deflects. When it is moved away from point P, the needle on the ammeter also deflects.

What magnetic pole is produced at P when the south pole of the magnet is brought towards and away from the solenoid?

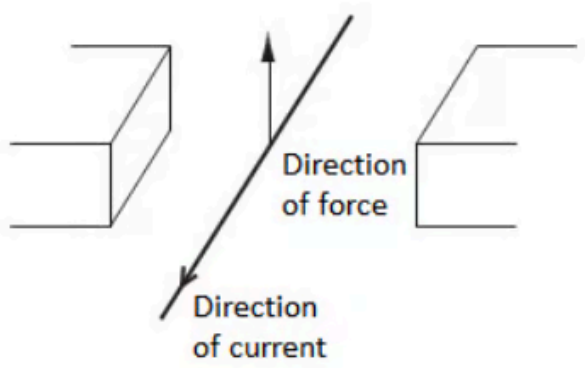
	S pole brought towards P	S pole moved away from P
A	N	N
B	N	S
C	S	N
D	S	S

[1 mark]

Question 4

Extended tier only

A current-carrying wire is placed between two magnetic poles as shown in the diagram below. It experiences an upwards force.



What is the orientation of the magnetic poles?

	Left magnet	Right magnet
A	N	N
B	S	N
C	N	S
D	S	S

[1 mark]

Question 5

Extended tier only

A transformer is used to raise the voltage of electricity produced at a power station before it is transmitted in power lines.

The power station generates electricity at a voltage of 25 kV and a current of 4000 A. The step-up transformer increases the voltage to 400 kV.

Assume that the transformer is 100% efficient.

What current flows in the power lines?

A. 0.25 A

B. 250 A

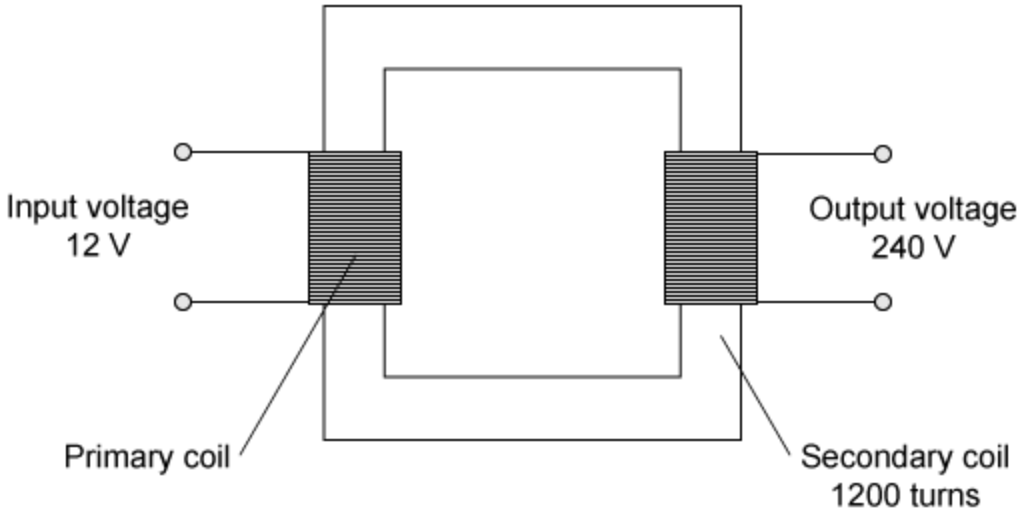
C. 640 A

D. 64 000 A

[1 mark]

Question 6

A transformer has 1200 turns on its secondary coil and has an output voltage of 240 V.



If the input voltage is 12 V, how many turns are there on the primary coil?

A. 2

B. 60

C. 1200

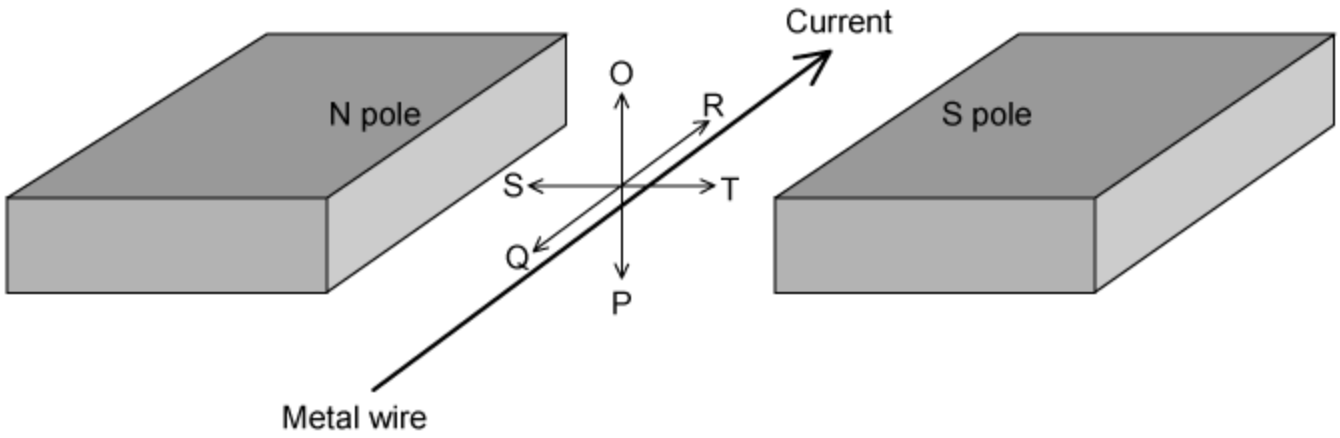
D. 24 000

[1 mark]

Question 7

Extended tier only

A current-carrying wire is placed into a magnetic field as shown in the diagram. The wire experiences a force.



In which direction does the force on the wire act?

A. OP

B. PO

C. ST

D. QR

[1 mark]