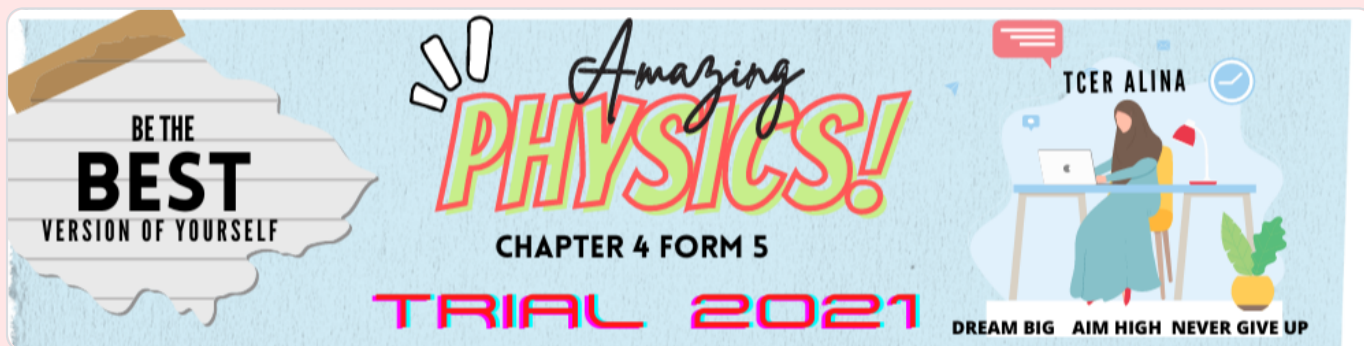




CHAPTER 4 F5: ELECTROMAGNETISM

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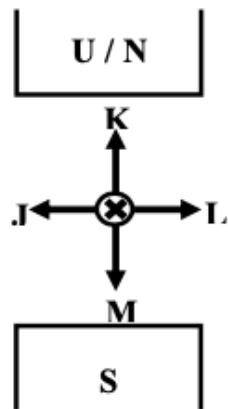
Choose



1.

1 point

Rajah di bawah menunjukkan konduktor pembawa arus di dalam medan magnet.
Diagram below shows a current-carrying conductor in a magnetic field.



⊗ Arah arus mengalir masuk ke dalam kertas
Direction of current flows into the paper

Pada arah manakah daya itu bertindak ke atas konduktor?
What is the direction of the force that acts on the conductor?

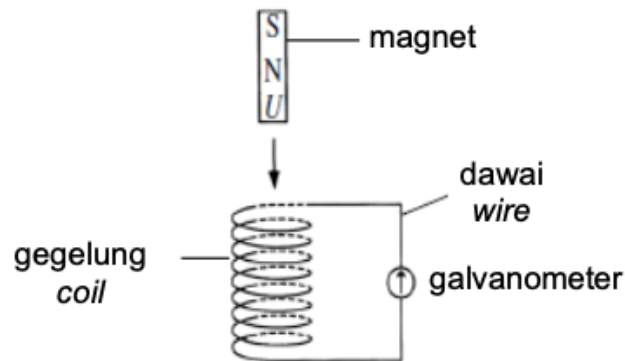
- A** K
- B** L
- C** M
- D** J

- ☐ A
- ☐ B
- ☐ C
- ☐ D

2.

1 point

Rajah menunjukkan sebatang magnet yang dilepaskan dari satu ketinggian dan kemudian memasuki sebuah gegelung yang disambung ke sebuah galvanometer.
Diagram shows a magnet which is released from a height and then enters a coil which is connected to a galvanometer.



Pesongan jarum galvanometer akan bertambah apabila
The deflection of the pointer of the galvanometer increases when

- A** luas keratan rentas dawai bertambah
the cross-section area of the wire increases
- B** magnet itu dilepaskan dari kedudukan yang lebih tinggi
the magnet is released from a higher position
- C** kekutuban magnet bertambah
the polarity of the magnet increases
- D** lilitan pada gegelung dijarakkan
the turns of the coil are set further apart

☐ A☐ B☐ C☐ D

3.

1 point

Mengapakah teras besi lembut digunakan dalam sebuah transformer?

Why a soft iron core is used in a transformer?

- A** mengurangi arus pusar
reduce the eddy current
- B** mengurangi kehilangan histeris
reduce the hystherisis loss
- C** mengurangi kebocoran fluks magnet
reduce magnetic flux leakage

☐ A

☐ B

☐ C

4.

1 point

Diagram 18 shows the Fleming's left-hand rule.

Rajah 18 menunjukkan petua tangan kiri Fleming.



Diagram 18
Rajah 18

Index finger represents

Jari telunjuk mewakili

A Force / *Daya*

B Magnetic field / *Medan magnet*

C Current / *Arus*

D Electromagnetic field / *Medan elektromagnet*

☐ A

☐ B

☐ C

☐ D

5.

1 point

Diagram 19 shows a bar magnet moving towards a solenoid.

Rajah 19 menunjukkan magnet bar digerakkan ke arah solenoid.

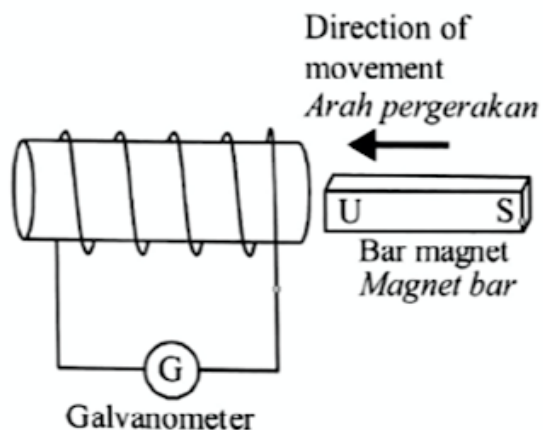


Diagram 19
Rajah 19

Which of these actions will NOT increase the deflection of the galvanometer pointer?

Tindakan manakah yang TIDAK akan menambahkan pesongan jarum galvanometer?

- A** Increasing the number of magnets used
Menambah bilangan magnet
- B** Increasing the speed of the bar magnet
Menambah laju magnet bar
- C** Reversing the polarity of the magnet
Menukar kutub magnet
- D** Increasing the number of coils in the solenoid
Menambah lilitan solenoid

- ☐ A
- ☐ B
- ☐ C
- ☐ D

Diagram 20 shows the structure of a transformer.

Rajah 20 menunjukkan struktur sebuah transformer.

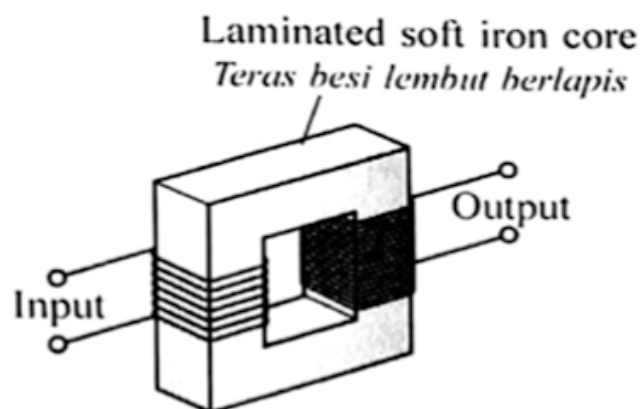


Diagram 20
Rajah 20

What is the function of laminated soft iron core in the transformer?

Apakah fungsi teras besi lembut berlamina pada transformer tersebut?

- A** To reduce eddy current
Untuk mengurangkan arus pusar
- B** To reduce resistance of coil
Untuk mengurangkan rintangan gegelung
- C** To avoid hysteresis
Untuk mengelakkan histerisis
- D** To prevent flux leakage
Untuk mencegah kebocoran fluks

☐ A

☐ B

☐ C

☐ D

7.

1 point

Diagram 21 shows a transformer that is used to light up a bulb 60 W.

Rajah 21 menunjukkan sebuah transformer yang digunakan untuk menghidupkan sebiji mentol, 60 W.

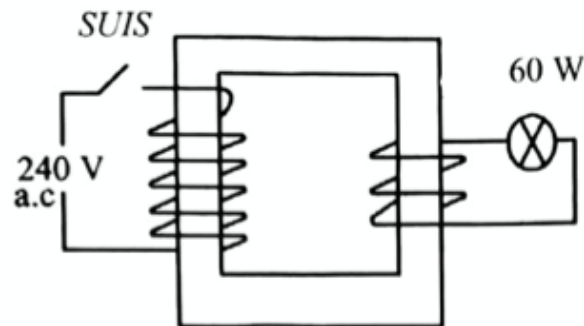


Diagram 21

Rajah 21

If the efficiency of the transformer is 85% , calculate the current, I when the switch is on.

Jika kecekapan transformer adalah 85%, hitung nilai arus, I yang mengalir bila suis dihidupkan.

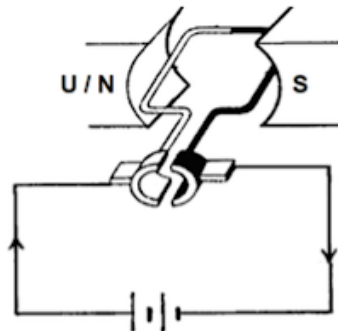
- A** 0.21 A
- B** 0.29 A
- C** 0.85 A
- D** 1.42 A

- ☐ A
- ☐ B
- ☐ C
- ☐ D

8.

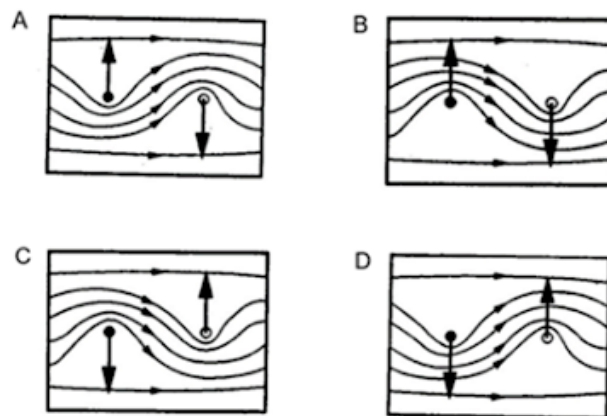
1 point

Rajah 17 menunjukkan satu gegelung membawa arus dalam medan magnet.
Diagram 17 shows a current carrying coil in a magnetic field.



Rajah 17
Diagram 17

Rajah manakah yang menunjukkan corak medan magnet yang dihasilkan?
Which diagram shows the pattern of the magnetic field produced?



☐ A

☐ B

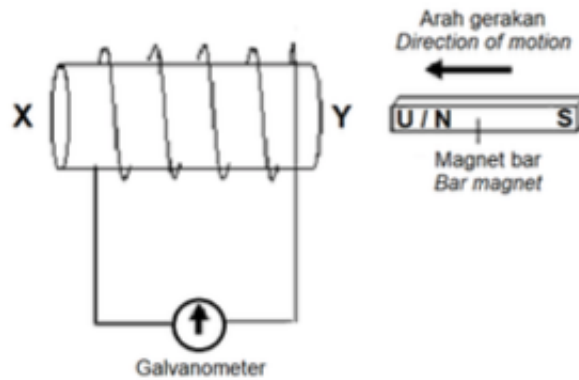
☐ C

☐ D

9.

1 point

Rajah 18 menunjukkan satu magnet bar digerakkan mendekati gegelung.
 Diagram 18 shows a bar magnet is moved towards a coil.



Rajah 18
 Diagram 18

Apakah kekutuban magnet pada kedua-dua hujung solenoid, X dan Y?
 What is the magnetic polarity at both ends of the solenoid, X and Y?

	X	Y
A	Selatan South	Selatan South
B	Selatan South	Utara North
C	Utara North	Utara North
D	Utara North	Selatan South

☐ A

☐ B

☐ C

☐ D

10.

1 point

Yang manakah antara berikut paling sesuai untuk penghantaran elektrik oleh Sistem Rangkaian Grid Nasional?

Which of the following is most suitable for transmission of electricity by a National Grid Network system?

	Jenis Arus <i>Type of current</i>	Magnitud arus <i>Magnitude of current</i>	Magnitud voltan <i>Magnitude of voltage</i>
A	Arus terus <i>Direct current</i>	Rendah <i>Low</i>	Sangat tinggi <i>Very high</i>
B	Arus ulangalik <i>Alternating current</i>	Sangat tinggi <i>Very high</i>	Rendah <i>Low</i>
C	Arus terus <i>Direct current</i>	Sangat tinggi <i>Very high</i>	Rendah <i>Low</i>
D	Arus ulangalik <i>Alternating current</i>	Rendah <i>Low</i>	Sangat tinggi <i>Very high</i>

☐ A☐ B☐ C☐ D

11.

1 point

Diagram 24 shows a left hand which represent the Fleming's Left-Hand Rule.

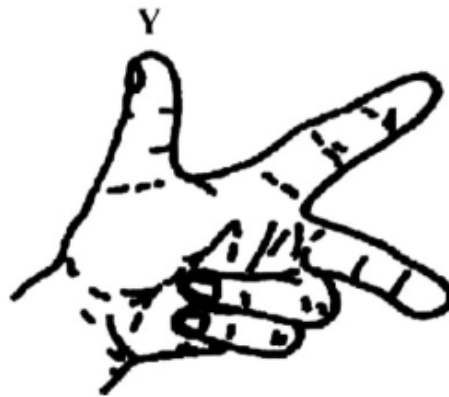


Diagram 24

What does Y represent?

A Potential difference

C Current

B Magnetic field

D Force

☐ A

☐ B

☐ C

☐ D

12.

1 point

Diagram 25 shows a copper rod cut magnetic flux.

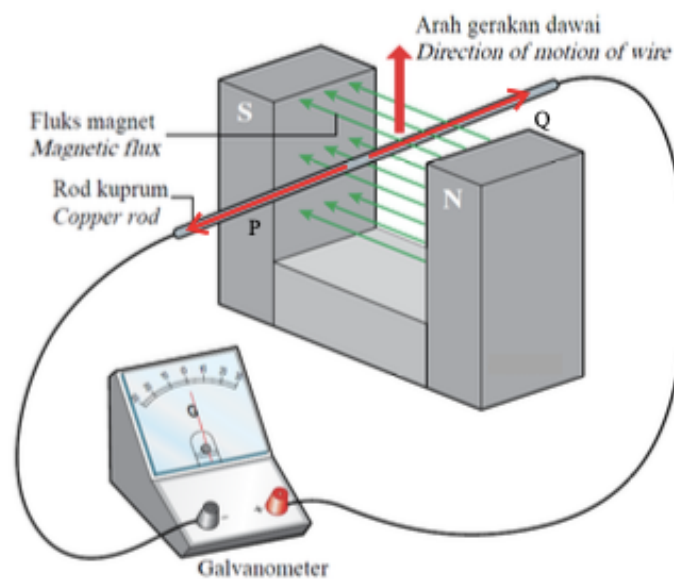


Diagram 25

Which of the following pair is correct to show the direction of induced current and direction of deflection of pointer in galvanometer?

	Direction of induced current	Direction of deflection of pointer of galvanometer
A	P	Left
B	Q	Right
C	P	Right
D	Q	Left

☐ A

☐ B

☐ C

☐ D

13.

1 point

Diagram 26 shows an ideal transformer.

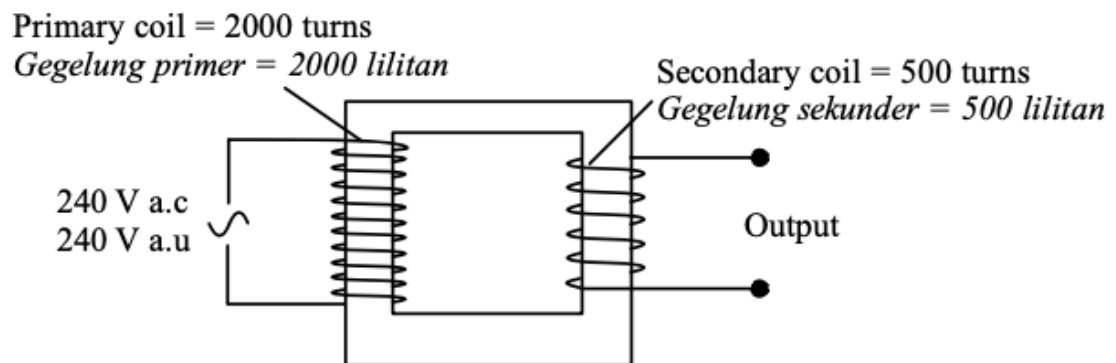


Diagram 26

What is the output voltage?

A 60 V

C 240 V

B 120 V

D 520 V

☐ A

☐ B

☐ C

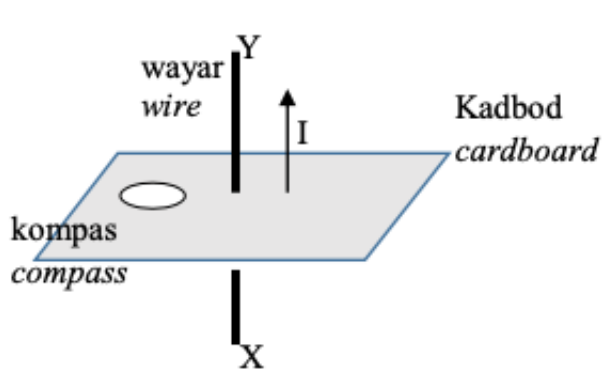
☐ D

Rajah 21.1 menunjukkan arah arus elektrik, I mengalir melalui dawai XY.

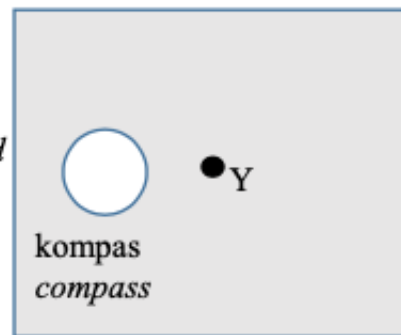
Rajah 21.2 menunjukkan pandangan dari atas kadbod

Diagram 21.1 shows the direction of electric current, I flows through wire XY.

Rajah 21.2 shows top view of the cardboard..



Rajah 21.1
Diagram 21.1



Rajah 21.2
Diagram 21.2

Rajah manakah menunjukkan kedudukan jarum kompas yang betul?

Which diagram shows the correct position of the compass needle?



☐ A

☐ B

☐ C

☐ D

15.

1 point

Arah arus aruhan apabila terdapat gerakan relatif antara satu konduktor dengan satu medan magnet boleh ditentukan oleh

The direction of an induced current when there is a relative motion between a conductor and a magnetic field can be determined by

- A** petua tangan-kanan Fleming
Fleming's right-hand rule
- B** petua tangan-kiri Fleming
Fleming's leftt-hand rule
- C** petua genggaman tangan kanan
right-hand grip rule
- D** petua genggaman tangan kiri
left-hand grip rule

☐ A

☐ B

☐ C

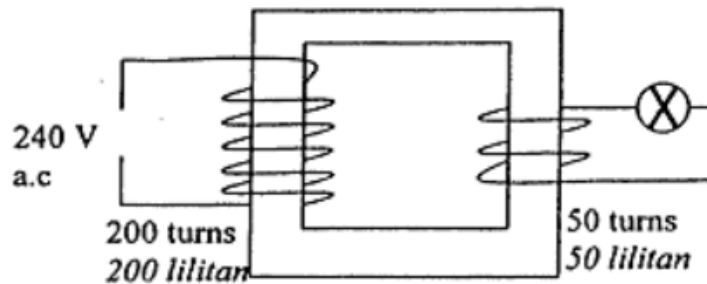
☐ D

16.

1 point

Rajah 22 menunjukkan sebuah transformer yang digunakan untuk menghidupkan sebiji mentol

Diagram 22 shows a transformer that is used to light up a bulb.



Rajah 22
Diagram 22

Antara pernyataan-pernyataan yang berikut, yang manakah **benar** tentang transformer itu?

*Which of the following statements is **true** about the transformer?*

	Jenis transformer <i>Type of transformer</i>	Voltan merentasi mentol <i>Voltage across bulb</i>
A	Injak naik <i>Step-up</i>	480 V
B	Injak naik <i>Step-up</i>	960 V
C	Injak turun <i>Step down</i>	120 V
D	Injak turun <i>Step down</i>	60 V

- ☐ A
- ☐ B
- ☐ C
- ☐ D

17.

1 point

Arah arus aruhan adalah sentiasa menentang pergerakan yang menghasilkannya.
Ini adalah

Induced current flows in such it opposes the direction that produced.it. This is

A Hukum Faraday
Faraday's law

B Hukum Snell
Snell's law

C Hukum Lenz
Lenz's law

D Hukum Ohm
Ohm's law

☐ A

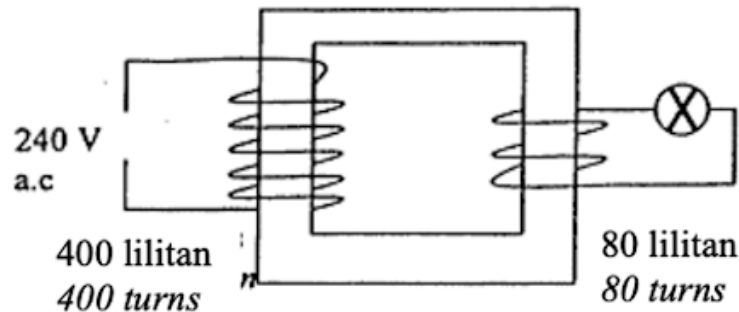
☐ B

☐ C

☐ D

Rajah 22 menunjukkan sebuah transformer yang digunakan untuk menyalakan sebiji mentol

Diagram 22 shows a transformer that is used to light up a bulb.



Rajah 22
Diagram 22

Antara pernyataan-pernyataan yang berikut, yang manakah **benar** tentang transformer itu?

*Which of the following statements is **true** about the transformer?*

	Jenis transformer <i>Type of transformer</i>	Voltan merentasi mentol <i>Voltage across bulb</i>
A	Injak naik <i>Step-up</i>	1200 V
B	Injak naik <i>Step-up</i>	480 V
C	Injak turun <i>Step down</i>	120 V
D	Injak turun <i>Step down</i>	48 V

☐ A

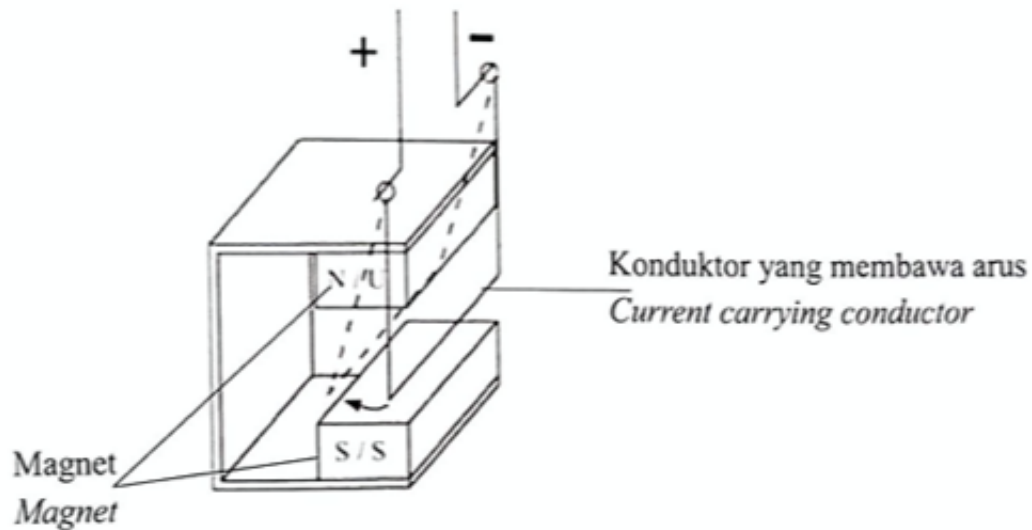
☐ B

☐ C

☐ D

Rajah 22 menunjukkan suatu konduktor membawa arus dalam medan magnet. Antara berikut yang manakah boleh digunakan untuk menentukan arah pergerakan konduktor tersebut?

Diagram 22 shows a conductor carrying a current in a magnetic field. Which of the following can be used to determine the direction of movement of the conductor?



Rajah 22
Diagram 22

- A Petua tangan kanan Fleming
Fleming's right-hand rule
- B Petua tangan kiri Fleming
Fleming's left-hand rule
- C Hukum Lenz
Lenz's Law
- D Hukum Faraday
Faraday's law

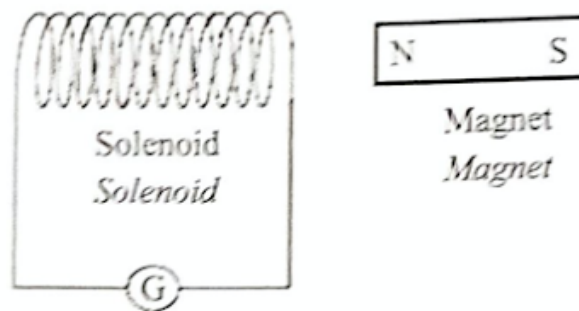
- ☐ A
- ☐ B
- ☐ C
- ☐ D

20.

1 point

Rajah 23 menunjukkan sebuah magnet pada suatu solenoid. Antara pernyataan berikut, yang manakah menunjukkan tiada d.g.e. diaruhkan dalam solenoid?

Diagram 23 shows a magnet at a solenoid. Which of the following statements indicates that no e.m.f. is induced in the solenoid?



Rajah 23
Diagram 23

- A Magnet digerakkan ke arah solenoid
The magnet is moved towards the solenoid
- B Solenoid digerakkan ke arah magnet
The solenoid is moved towards the magnet
- C Magnet dan solenoid digerakkan ke arah bertentangan antara satu sama lain
The magnet and solenoid are moved in opposite directions to each other
- D Magnet dan solenoid digerakkan ke arah yang sama
The magnet and solenoid are moved in the same direction

- ☐ A
- ☐ B
- ☐ C
- ☐ D

21.

1 point

Sebuah transformer yang beroperasi akan mengalami kehilangan tenaga dan transformer tidak dapat beroperasi pada kemampuan yang optimum. Antara berikut, manakah yang dapat meningkatkan kecekapan suatu transformer?

An operating transformer will experience power loss and the transformer will not be able to operate at an optimal capacity. Which of the following can increase the efficiency of a transformer?

- I Menggunakan wayar yang lebih nipis
Using thinner wire
- II Menggunakan teras besi lembut
Using soft iron core
- III Melilitkan gelung sekunder dan primer di atas satu sama lain
Winding the secondary and primary coils on top of each other
- IV Menggunakan teras berlamina
Using laminated core

- A I dan II
I and II
- B II dan III
II and III
- C II, III dan IV
II, III and IV
- D I, II, III dan IV
I, II, III and IV

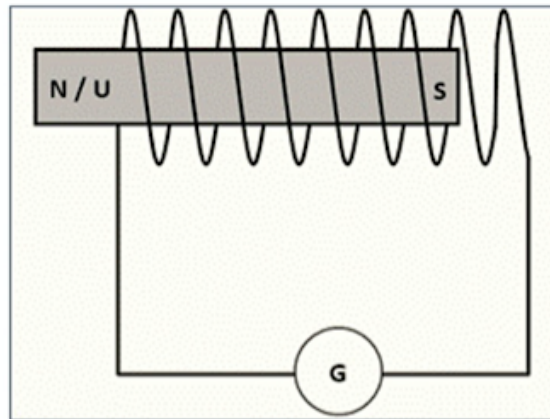
- ☐ A
- ☐ B
- ☐ C
- ☐ D

22.

1 point

Rajah 21 menunjukkan solenoid disambung kepada sebuah galvanometer dan satu magnet bar berada di dalam solenoid itu.

Diagram 21 shows a solenoid connected to a galvanometer and a bar magnet placed inside the solenoid.



Rajah 21

Diagram 21

Tindakan yang manakah akan menyebabkan tiada pesongan pada penunjuk galvanometer?

Which action will cause no deflection of the galvanometer pointer?

- A Menolak magnet dengan perlahan ke dalam solenoid
Push the magnet slowly into the solenoid
- B Tarik magnet menjauhi solenoid
Pull the magnet away from the solenoid
- C Menggerakkan magnet dan solenoid dalam arah yang berlawanan
Move the magnet and the solenoid in the opposite direction
- D Menggerakkan magnet dan solenoid dalam arah yang sama pada laju yang sama
Move the magnet and the solenoid in the same direction at the same speed

☐ A

☐ B

☐ C

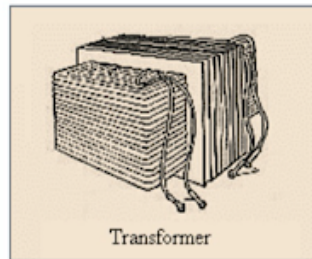
☐ D

23.

1 point

Rajah 22 menunjukkan sebuah transformer.

Diagram 22 shows a transformer.



Rajah 22
Diagram 22

Manakah antara langkah berikut digunakan untuk meningkat lagi kecekapan transformer di atas?

Which of the following method is used to increase the efficiency of the transformer above?

A Menggunakan wayar lebih nipis
Use a thinner wire

B Menggunakan teras besi pejal
Use solid iron core

C Menggunakan teras besi keluli
Use steel iron core

D Menggunakan teras besi berlaminasi
Use laminated iron core

☐ A

☐ B

☐ C

☐ D

24.

1 point

Arus ulang alik digunakan dalam penghantaran tenaga elektrik kerana
Alternating current supply is used in the transmission of electricity because

- A arus ulang alik lebih mudah dijana
alternating current is easier to generate
- B voltan arus ulang alik boleh diubah dengan mudah
the voltage of the alternating current can be changed easily
- C frekuensi arus ulang alik boleh diubah dengan mudah
the frequency of the alternating current can be changed easily
- D kuasa bekalan boleh dikekalkan pada satu nilai yang tetap
the power of the supply can be maintained at a constant value

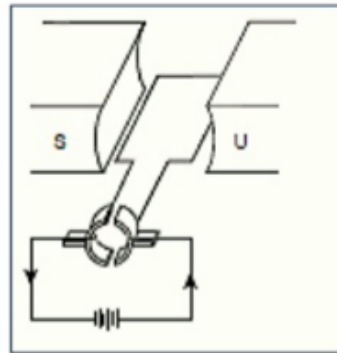
- ☐ A
- ☐ B
- ☐ C
- ☐ D

25.

1 point

Rajah 17 menunjukkan gegelung membawa arus dalam satu medan magnet.

Diagram 17 shows the current-carrying coil in a magnetic field.



Rajah 17

Diagram 17

Nyatakan arah putaran gegelung apabila suis dihidupkan.

State the direction of rotation of the coil when the switch is turned on.

- A Pegun
Stationary
- B Arah lawan putaran jam dan arah putaran jam secara berselang-seli
Anti-clockwise and clockwise rotation alternately
- C Arah putaran jam
Clockwise rotation
- D Arah lawan putaran jam
Anti-clockwise rotation

☐ A

☐ B

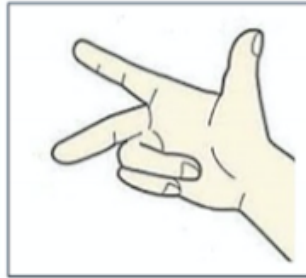
☐ C

☐ D

26.

1 point

Rajah 18 menunjukkan tiga jari yang digunakan dalam Petua Tangan Kanan Fleming.
Diagram 18 shows the three fingers used in Fleming's right hand rule.



Rajah 18

Diagram 18

Apakah yang diwakili oleh ibu jari dalam Petua Tangan Kanan Fleming?

What is represented by thumb in Fleming's right hand rule?

A Daya
Force

C Medan magnet
Magnetic field

B Gerakan
Motion

D Arus aruhan
Induced current

☐ A

☐ B

☐ C

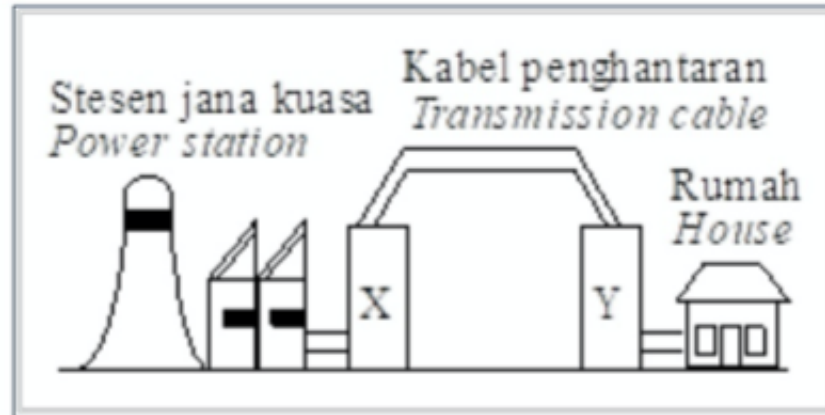
☐ D

27.

1 point

Rajah 19 menunjukkan model penghantaran elektrik.

Diagram 19 shows a model of transmission of electricity.



Rajah 19

Diagram 19

Transformer manakah yang betul untuk X dan Y?

Which transformers are correct for transformer X and Y?

	X	Y
A	Transformer injak naik <i>Step-up transformer</i>	Transformer injak naik <i>Step-up transformer</i>
B	Transformer injak naik <i>Step-up transformer</i>	Transformer injak turun <i>Step-down transformer</i>
C	Transformer injak turun <i>Step-down transformer</i>	Transformer injak turun <i>Step-down transformer</i>
D	Transformer injak turun <i>Step-down transformer</i>	Transformer injak naik <i>Step-up transformer</i>

☐ A

☐ B

☐ C

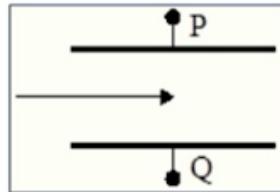
☐ D

28.

1 point

Rajah 20 menunjukkan aliran sinar katod dipesongkan oleh beza keupayaan antara plat P dan Q.

Diagram 20 shows a beam of cathode ray is being deflected due to a potential difference between plates P and Q.

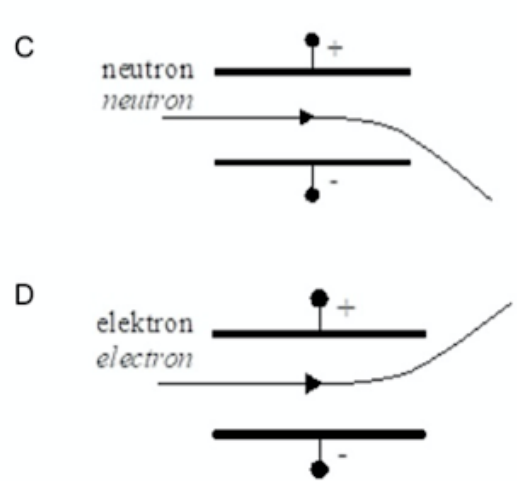
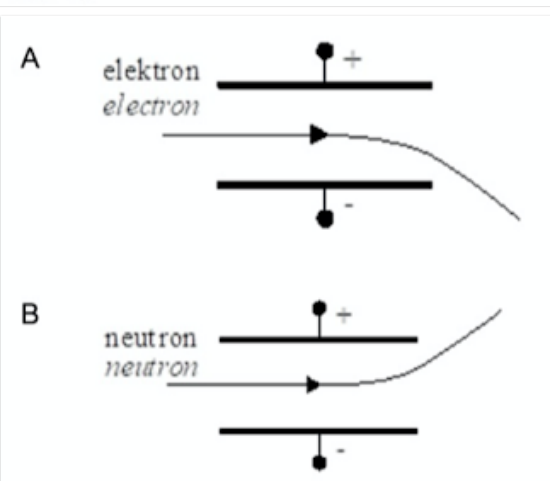


Rajah 20

Diagram 20

Antara rajah berikut, yang manakah betul untuk menunjukkan laluan sinar katod di antara plat P dan Q?

Which of the following diagrams is correct to show the path of cathode rays between plates P and Q?


☐ A

☐ B

☐ C

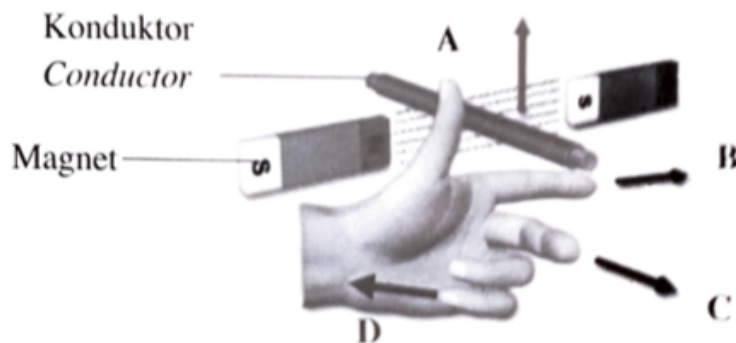
☐ D

29.

1 point

Satu konduktor pembawa arus diletakkan dalam medan magnet. Arah daya yang bertindak ke atas konduktor itu ditentukan menggunakan Petua Tangan Kiri Fleming seperti dalam Rajah 28.

A current-carrying conductor is placed in magnetic field. The direction of force on the current-carrying conductor is determined by using Fleming's Left-Hand Rule as in Diagram 28.



Rajah 28
Diagram 28

Antara arah jari A, B, C dan D, yang manakah yang menunjukkan arah daya?

Which of the directions of fingers A, B, C and D, shows the direction of the force?

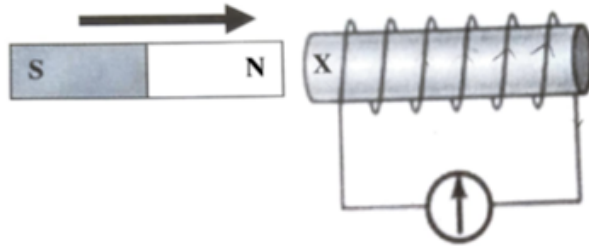
- ☐ A
- ☐ B
- ☐ C
- ☐ D

30.

1 point

Rajah 29 menunjukkan satu magnet bar ditolak masuk ke dalam solenoid yang disambungkan dengan galvanometer berpusat sifar untuk menentukan arah pengaliran arus aruhan.

Diagram 29 shows a bar magnet is pushed into a solenoid which is connected to a zero centered galvanometer to determine the direction of induced current.



Rajah 29
Diagram 29

Pasangan manakah yang betul?
Which pair is correct?

A

**Hukum
Law**

Hukum Lenz
Lenz's law

**Kekutuban X
X polarity**

Utara
North

B

Hukum Lenz
Lenz's law

Selatan
South

C

Hukum Faraday
Faraday's law

Utara
North

D

Hukum Faraday
Faraday's law

Selatan
South

☐ A

☐ B

☐ C

☐ D

31.

1 point

Diagram 29 shows a cross section of a current-carrying conductor between two magnets.

Rajah 29 menunjukkan keratan rentas satu konduktor yang membawa arus di antara dua magnet.

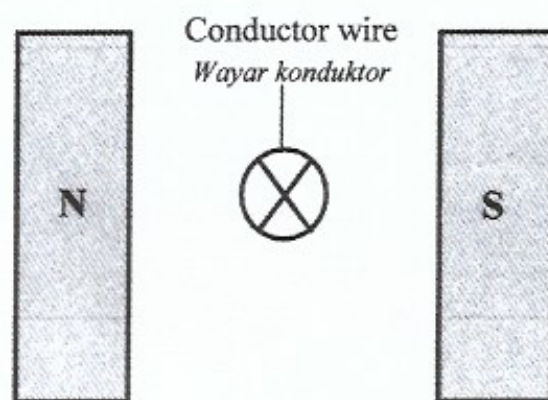
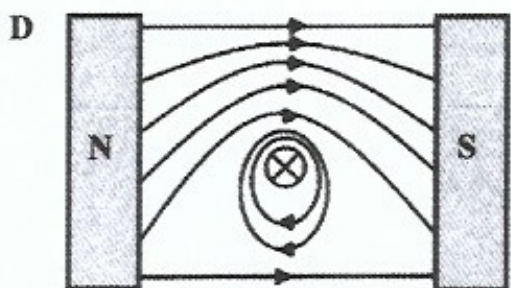
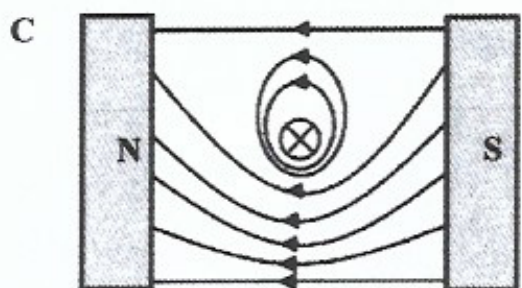
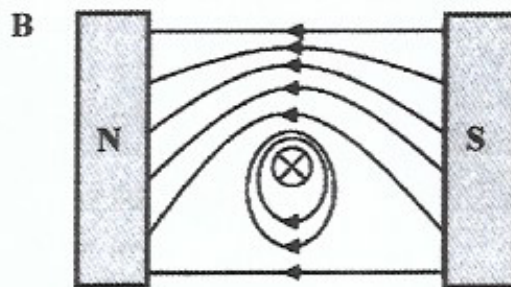
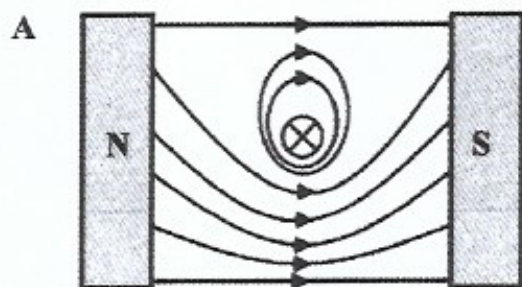


Diagram 29
Rajah 29

Which diagram shows the correct catapult field?

Rajah manakah menunjukkan medan lastik yang betul?



- ☐ A
- ☐ B
- ☐ C
- ☐ D

Diagram 30 shows a transformer with efficiency of 70%.

Rajah 30 menunjukkan sebuah transformer dengan kecekapan 70%.

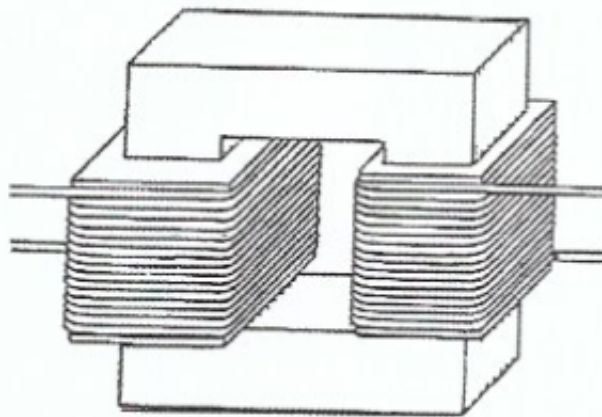


Diagram 30

Rajah 30

What action can be taken to increase the efficiency of the transformer?

Apakah tindakan yang boleh diambil bagi meningkatkan kecekapan transformer tersebut?

A Use steel as a core

Gunakan keluli sebagai teras

B Use laminated iron core

Gunakan teras besi berlamina

C Use thinner copper wire as a coil

Gunakan dawai kuprum yang lebih nipis sebagai gegelung

D The secondary coil is wound beside the primary coil

Gegelung sekunder dililit bersebelahan gegelung primer.

☐ A

☐ B

☐ C

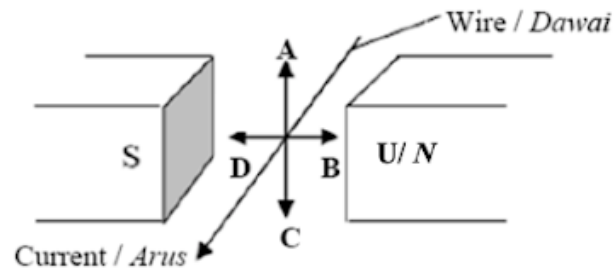
☐ D

33.

1 point

Rajah 32 menunjukkan seutas dawai yang membawa arus di antara kutub-kutub sepasang magnet kekal. Apakah arah daya pada dawai itu?

Diagram 32 shows a current-carrying wire between the poles of a pair of permanent magnets. What is the direction of the force on the wire?

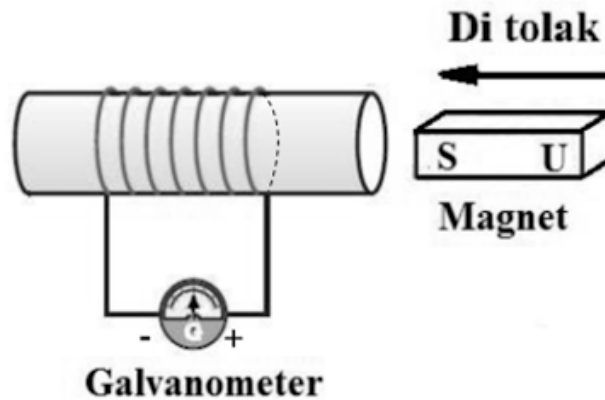


Rajah 32
Diagram 32

- ☐ A
- ☐ B
- ☐ C
- ☐ D

Rajah 33 menunjukkan sebatang magnet bar ditolak masuk ke dalam satu solenoid yang disambung kepada sebuah galvanometer berpusat sifar.

Diagram 33 shows a bar magnet pushed into a solenoid connected to a zero-centered galvanometer.



Rajah 33
Diagram 33

Apakah yang akan berlaku kepada jarum penunjuk galvanometer?
What will happen to the galvanometer indicator pointer?

- A terpesong dan kembali ke sifar
deflect and return to zero
- B terpesong dan kekal di situ
deflect and remain there
- C tidak terpesong
not deflect

- ☐ A
- ☐ B
- ☐ C

35.

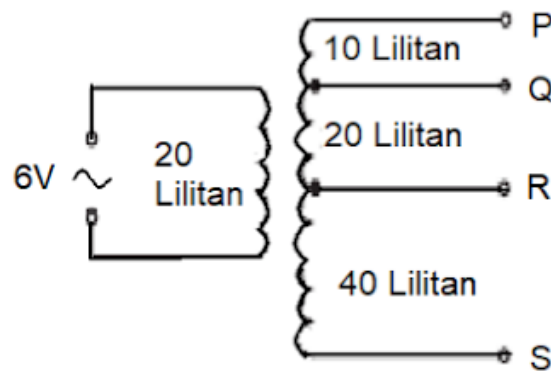
1 point

Rajah 34 menunjukkan bilangan lilitan pada pasangan terminal output suatu transformer.

Pasangan terminal output yang manakah, voltan output adalah 12 V?

Diagram 34 shows the number of turns on the output terminal pair of a transformer.

Which pair of output terminals, the output voltage is 12 V?



Rajah 34
Diagram 34

A R - S

C P - Q

B Q - R

D P - R

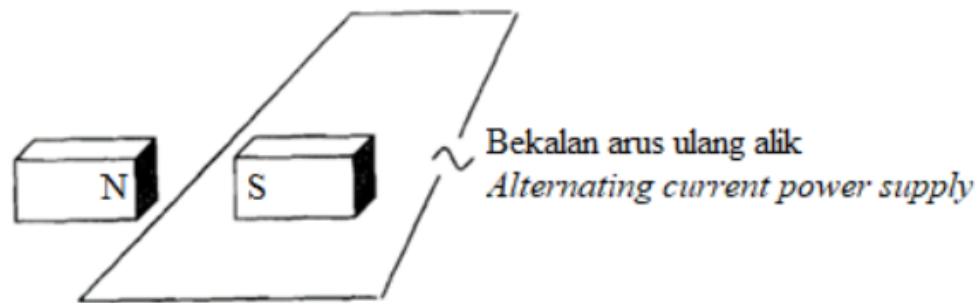
☐ A

☐ B

☐ C

☐ D

Rajah 24 menunjukkan satu wayar yang tergantung antara kutub-kutub dua magnet.
Diagram 24 shows a wire suspended between the poles of two magnets.



Rajah 24
Diagram 24

Ke arah manakah wayar itu akan bergerak?
Which direction will the wire move?

- A Atas sahaja
Up only
- B Kanan sahaja
Right only
- C Atas dan bawah
Up and down
- D Kiri dan kanan
Left and right

- ☐ A
- ☐ B
- ☐ C
- ☐ D

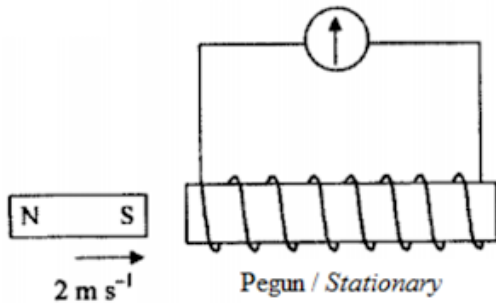
37.

1 point

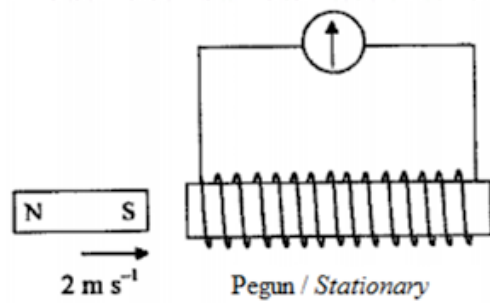
Rajah manakah menunjukkan pesongan yang paling besar bagi penunjuk galvanometer apabila magnet dan solenoid digerakkan seperti arah yang ditunjukkan?

Which of the following diagrams shows the biggest deflection of the pointer on the galvanometer when the magnet and the solenoid are moved in the direction shown?

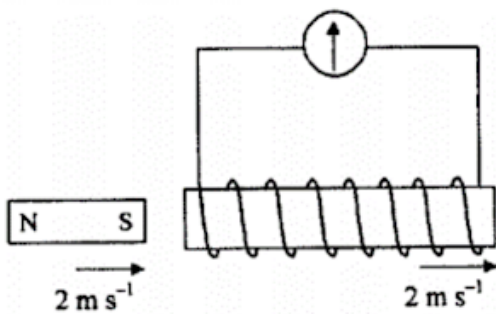
A



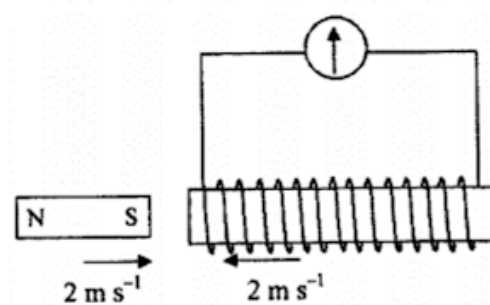
C



B



D

☐ A☐ B☐ C☐ D

38.

1 point

Manakah antara berikut benar tentang transformer injak turun?

Which of the following is true regarding to the step-down transformer?

A Voltan output lebih besar berbanding dengan voltan input.

The output voltage greater than the input voltage.

B Kuasa output lebih besar daripada kuasa input.

The output power greater than the input power.

C Arus output lebih besar daripada arus input.

The output current greater than the input current.

D Tenaga output lebih besar daripada tenaga input.

The output energy is greater than the input energy.

☐ A

☐ B

☐ C

☐ D

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