

4531/1
PHYSICS
Paper 1
September
2008
1 ¼ hours



MAKTAB RENDAH SAINS MARA

**SIJIL PELAJARAN MALAYSIA
TRIAL EXAMINATION 2008**

PHYSICS

Paper 1

One hour and fifteen minutes

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

1. This paper is written in English and bahasa Melayu.
2. The question in English is written before the bahasa Melayu version.
3. Candidates are required to read the information at the back of the booklet.

This booklet consists of 38 printed pages.

The following information may be useful. The symbols have their usual meaning.
(Maklumat berikut mungkin berfaedah. Simbol-simbol mempunyai makna yang biasa.)

1. $v = \frac{s}{t}$
2. $a = \frac{v-u}{t}$
3. $v^2 = u^2 + 2as$
4. $s = ut + \frac{1}{2}at^2$
5. Momentum = mv
6. $F = ma$
7. Kinetic energy (*Tenaga kinetik*) = $\frac{1}{2}mv^2$
8. Potential energy (*Tenaga keupayaan*) = mgh
9. Density (*Ketumpatan*) = $\rho = \frac{m}{V}$
10. Pressure (*Tekanan*), $P = \frac{F}{A}$
11. Pressure (*Tekanan*), $P = h\rho g$
12. Heat (*Haba*), $Q = mc\theta$
13. Heat (*Haba*), $Q = ml$
14. $\frac{PV}{T} = \text{constant}$ (*pemalar*)
15. $v = f\lambda$
16. Wavelength (*panjang gelombang*), $\lambda = \frac{ax}{D}$
17. Power (*Kuasa*), $P = \frac{E}{t}$
18. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
19. Linear magnification (*Pembesaran linear*), $M = \frac{v}{u}$
20. Refractive index (*indeks biasan*), $n = \frac{\sin i}{\sin r}$
21. Refractive index (*indeks biasan*), $n = \frac{\text{real depth (dalam nyata)}}{\text{apparent depth (dalam ketara)}}$
22. $Q = It$
23. $V = IR$

24. Power (*Kuasa*), $P = IV$

$$25. \frac{N_s}{N_p} = \frac{V_s}{V_p}$$

$$26. E = mc^2$$

$$27. \text{Efficiency (kecekapan)} = \frac{I_s V_s}{I_p V_p} \times 100\%$$

$$28. g = 10 \text{ m s}^{-2}$$

29. Atmospheric pressure at sea level (*Tekanan atmosfera pada aras laut*) = $1 \times 10^5 \text{ Pa}$

Each question is followed by **three** or **four** options. Choose the best option for each question then darken the correct space on the answer sheet.

Tiap-tiap soalan diikuti oleh sama ada **tiga** atau **empat** pilihan jawapan. Pilih satu jawapan yang terbaik bagi setiap soalan dan hitamkan ruangan yang betul pada kertas jawapan anda.

1 Which of these following physical quantities is a scalar quantity?

Antara kuantiti berikut yang manakah kuantiti scalar?

- A Velocity
Halaju
- B Distance
Jarak
- C Acceleration
Pecutan
- D Displacement
Sesaran

2 Which of the following values is equal to $5.0 \mu\text{A}$?

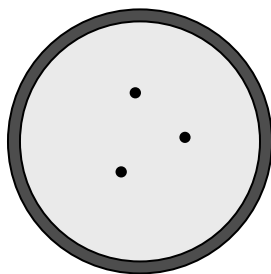
Yang manakah antara nilai berikut bersamaan dengan $5.0 \mu\text{A}$?

- A $5.0 \times 10^{-9} \text{ A}$
- B $5.0 \times 10^{-6} \text{ A}$
- C $5.0 \times 10^{-3} \text{ A}$
- D $5.0 \times 10^6 \text{ A}$

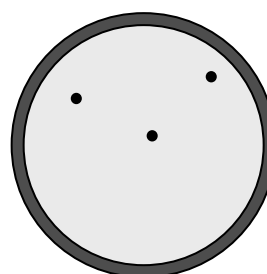
3 Which of the following diagrams shows the highest consistency?

Antara Rajah berikut, yang manakah menunjukkan kepersisan paling tinggi?

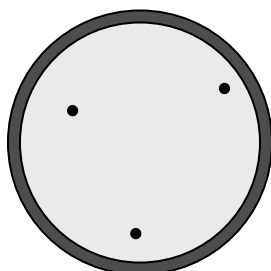
A



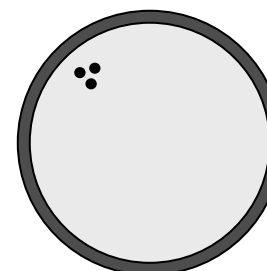
B



C



D



- 4 Diagram 1 shows a strip of ticker tape which is attached to a moving trolley.
Rajah 1 menunjukkan satu keratan pita detik yang dilekatkan pada sebuah troli yang sedang bergerak.

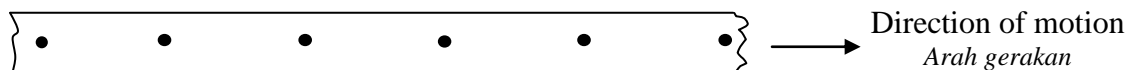


Diagram 1
Rajah 1

The trolley is moving with a
Troli itu sedang bergerak dengan

- A constant deceleration
nyahpecutan seragam
 - B constant acceleration
pecutan seragam
 - C constant velocity
halaju seragam
- 5 Diagram 2 shows a displacement-time graph of a moving bicycle.
Rajah 2 menunjukkan graf sesaran-masa bagi sebuah basikal yang sedang bergerak.

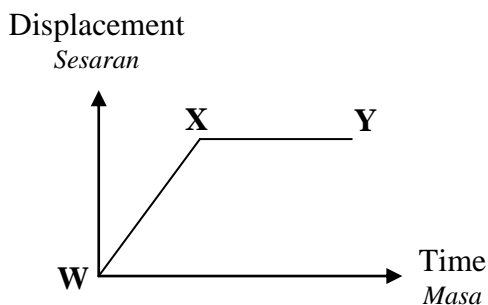


Diagram 2
Rajah 2

Which of the following describes the motion of the bicycle?
Antara yang berikut, yang manakah menerangkan pergerakan basikal tersebut?

- | | <u>WX</u> | <u>XY</u> |
|---|--|--|
| A | Uniform velocity
<i>Halaju seragam</i> | Zero velocity
<i>Halaju sifar</i> |
| B | Increasing velocity
<i>Halaju bertambah</i> | Zero velocity
<i>Halaju sifar</i> |
| C | Uniform velocity
<i>Halaju seragam</i> | Decreasing velocity
<i>Halaju berkurang</i> |
| D | Increasing velocity
<i>Halaju bertambah</i> | Decreasing velocity
<i>Halaju berkurang</i> |

6 Which of the following vehicles is the easiest to stop?

Antara kenderaan yang berikut, yang manakah paling senang untuk diberhentikan ?

A



B



C



D



- 7 Diagram 3 shows two trolleys each of mass 1 kg before and after collision. The initial velocity of trolley A and trolley B are 6 m s^{-1} and 4 m s^{-1} respectively. After collision, both trolleys move together in the direction of their initial velocity.

Rajah 3 menunjukkan dua buah troli dengan jisim 1 kg setiap satu. Halaju awal troli A dan troli B masing-masing adalah 6 m s^{-1} dan 4 m s^{-1} . Selepas perlanggaran, kedua-dua troli bergerak bersama-sama dalam arah yang sama dengan halaju awal.

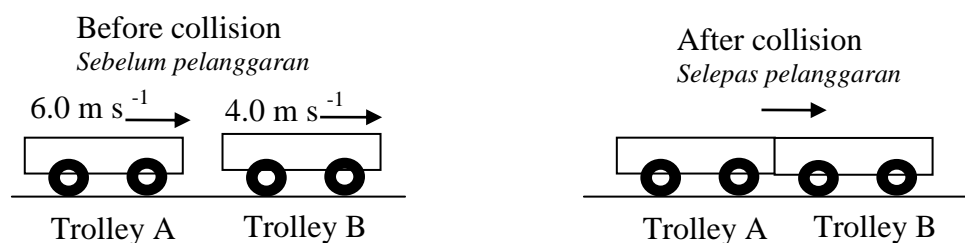


Diagram 3
Rajah 3

What is the velocity of both trolleys after collision?

Berapakah halaju kedua-dua troli selepas perlanggaran?

- A 1.0 m s^{-1}
- B 2.0 m s^{-1}
- C 5.0 m s^{-1}
- D 10.0 m s^{-1}
- 8 A constant force of 20 N acts on a block placed on a rough surface as shown in Diagram 4.

Daya seragam 20 N bertindak ke atas sebuah bongkah yang diletakkan di atas satu permukaan kasar seperti dalam Rajah 4.

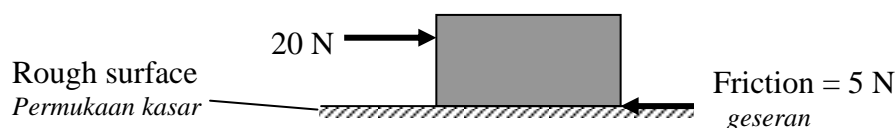


Diagram 4
Rajah 4

If the friction is 5 N, the block will move with

Jika daya geserann ialah 5 N, bongkah tersebut akan bergerak dengan

- A constant velocity
halaju seragam
- B constant acceleration
pecutan seragam
- C increasing acceleration
pecutan bertambah
- D decreasing acceleration
pecutan berkurang

- 9 A lorry of mass 9 600 kg is moving with a velocity of 0.025 km s^{-1} on the highway. Suddenly it brakes and hit the road divider. Calculate the impulse of the lorry.
Sebuah lori yang berjirim 9 600 kg bergerak dengan kelajuan 0.025 km s^{-1} di lebuhraya. Tiba-tiba ia membrek dan berlanggar tembok pembahagi jalan. Kirakan impuls lori tersebut.
- A $2.4 \times 10^1 \text{ N s}$
B $2.4 \times 10^2 \text{ N s}$
C $2.4 \times 10^4 \text{ N s}$
D $2.4 \times 10^5 \text{ N s}$
- 10 Bumpers of cars are built from material that is easy to crumple. This helps to
Bumper kereta dibina dari bahan yang mudah remuk. Ini membantu untuk
- A decrease the velocity
mengurangkan halaju
- B decrease the acceleration
mengurangkan pecutan
- C increase the time of impact
menambahkan masa perlanggaran
- D increase the impulsive force
menambahkan daya impulse
- 11 While a stone falls freely from a high cliff, which of the quantity remains unchanged?
Semasa sebiji batu jatuh dari atas tebing yang tinggi, yang manakah antara kuantiti berikut tidak berubah?
- A Speed
Laju
- B Velocity
Halaju
- C Acceleration
Pecutan
- D Displacement
Sesaran

- 12 Diagram 5 shows a flower pot of mass 2 kg hanging from a pole.
Rajah 5 menunjukkan sebuah pasu bunga berjisim 2 kg tergantung pada sebatang tiang.

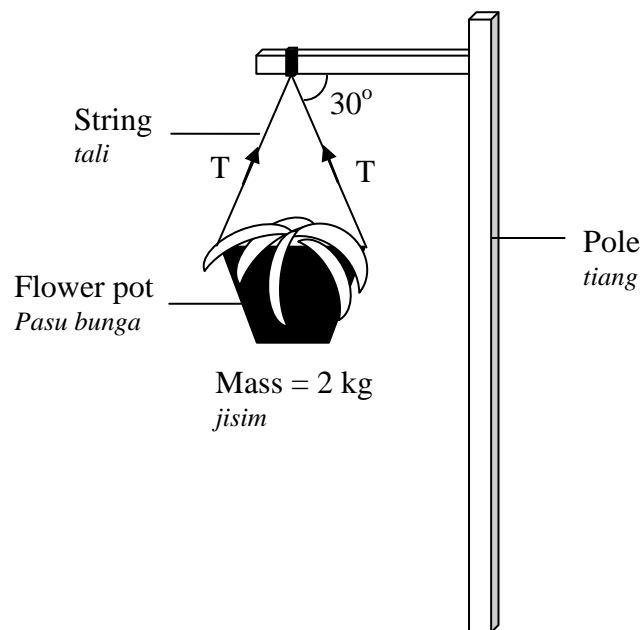


Diagram 5
Rajah 5

Calculate the tension, T , of each string.
Kirakan ketegangan, T , pada setiap tali.

- A 11.54 N
 B 20.00 N
 C 23.09 N
 D 40.00 N
- 13 Tenaga Nasional Berhad is a company which supplies electricity all over Malaysia. The consumption of electrical energy is measured in
Tenaga Nasional Berhad adalah syarikat yang membekalkan tenaga elektrik ke seluruh Malaysia. Penggunaan tenaga elektrik diukur dalam
- A kW h^{-1}
 kW j^{-1}
 B kW h
 kW j
 C J
 J
 D J s
 $J s$

- 14 Diagram 6 shows a graph of force against extension for an elastic string.
Rajah 6 menunjukkan graf daya melawan pemanjangan bagi seutas tali kenyal.

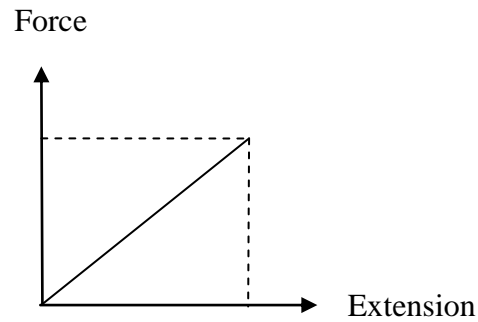


Diagram 6
Rajah 6

- The elastic potential energy of the string is represented by the
Tenaga keupayaan kenyal tali tersebut diwakili oleh
- A area under the graph
luas di bawah graf
 - B gradient of the graph
kecerunan graf
 - C intercept on the y-axis
pintasan pada paksi-y
- 15 Gas pressure in a closed container is due to gas molecules
Tekanan gas di dalam sebuah bekas bertutup adalah disebabkan oleh molekul gas
- A moving randomly
bergerak secara rawak
 - B moving with equal speed
bergerak dengan halaju yang sama
 - C colliding with one another
berlanggar sesama sendiri
 - D colliding with the walls of the container
berlanggar dengan dinding bekas

16 Diagram 7 shows a U-tube containing water and kerosene.

Rajah 7 menunjukkan tiub-U yang mengandungi air dan kerosin.

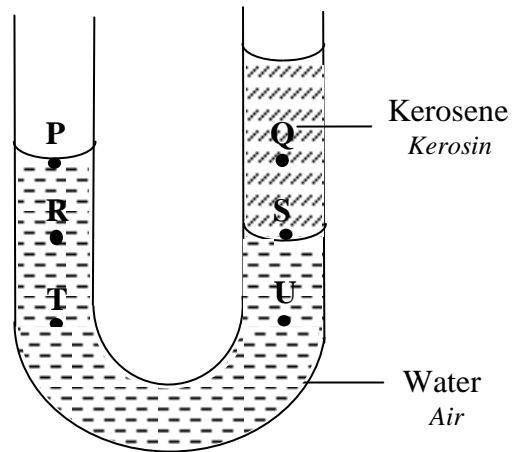


Diagram 7
Rajah 7

Which pair of points have the same pressure ?

Pasangan titik manakah mempunyai tekanan yang sama ?

- A P and Q
P dan Q
- B T and S
T dan S
- C R and S
R dan S
- D R and U
R dan U

- 17 Diagram 8 shows a plastic bag filled with air attached to a manometer.
Rajah 8 menunjukkan sebuah beg plastik yang berisi udara disambungkan pada manometer.

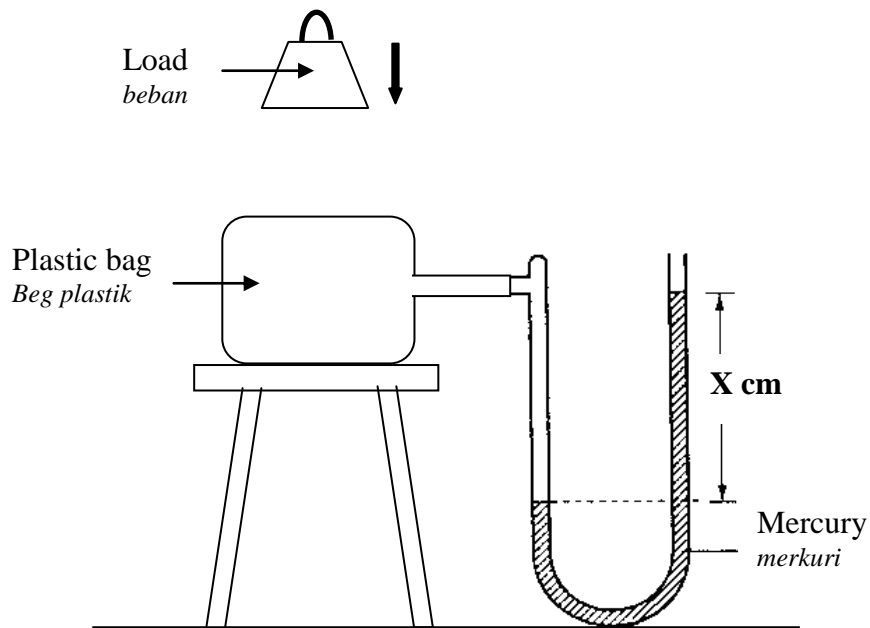


Diagram 8
Rajah 8

A load is then placed on the plastic bag. What happens to **X**?
*Satu beban diletakkan di atas beg plastik. Apakah yang berlaku pada **X**?*

- A Increases
Bertambah
- B Decreases
Berkurang
- C Unchanged
Tidak berubah

- 18** Diagram 9 shows a hydraulic system. When force, F_X is applied to piston X, it moves downwards with a distance d .

Rajah 9 menunjukkan sebuah sistem hidraulik. Apabila daya, F_x dikenakan pada omboh X, ia bergerak ke bawah dengan jarak d .

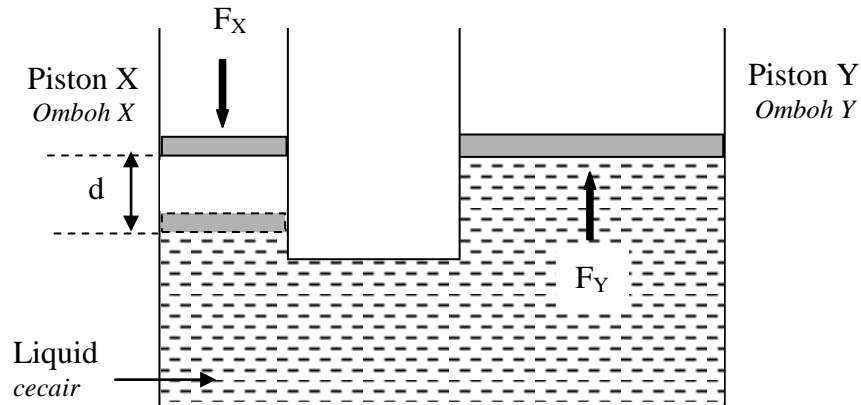


Diagram 9
Rajah 9

Which of the following statement is correct ?

Manakah antara pernyataan berikut benar ?

- A** Piston Y moves up a distance of more than d
Omboh Y bergerak ke atas pada jarak lebih daripada d
- B** The forces on piston X and Y are the same
Daya pada omboh X dan Y adalah sama
- C** Piston Y moves up a distance of less than d
Omboh Y bergerak ke atas pada jarak kurang dari d
- D** The force on piston Y, F_Y is less than the force on piston X
Daya pada omboh Y, F_Y kurang dari daya pada omboh X

- 19 Diagram 10 shows a test tube partially filled with sand, floating vertically in water.
Rajah 10 menunjukkan sebuah tabung uji yang berisi pasir, terapung secara tegak di dalam air.

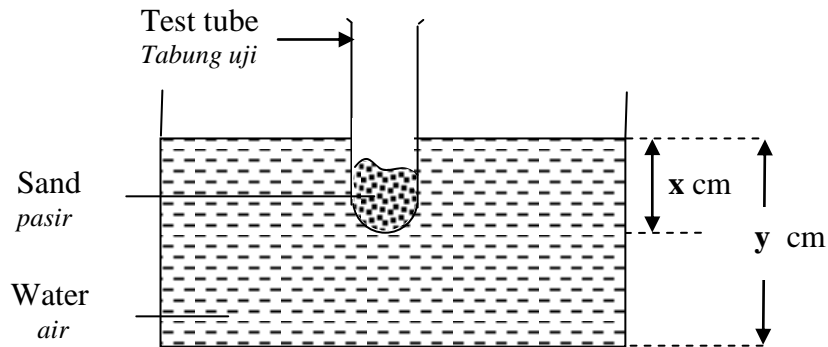


Diagram 10
Rajah 10

What will happen to x and y if more sand is added to the test tube?

Apakah yang akan berlaku kepada x dan y jika lebih banyak pasir dimasukkan ke dalam tabung uji?

	<u>x</u>	<u>y</u>
A	Decreases <i>Berkurang</i>	Increases <i>Bertambah</i>
B	Increases <i>Bertambah</i>	Decreases <i>Berkurang</i>
C	Decreases <i>Berkurang</i>	Decreases <i>Berkurang</i>
D	Increases <i>Bertambah</i>	Increases <i>Bertambah</i>

20 Diagram 11 shows a Bernoulli tube.

Rajah 11 menunjukkan sebuah tiub Bernoulli.

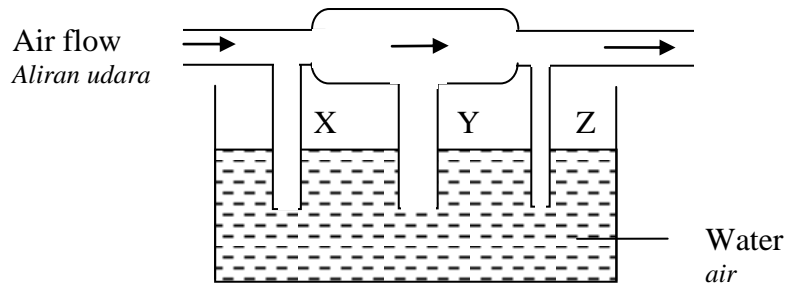


Diagram 11

Rajah 11

Based on Bernoulli's principle, which tube has the lowest water level?

Berdasarkan prinsip Bernoulli, tiub yang manakah mempunyai aras air yang terendah?

- A X
- B Y
- C Z

21 Diagram 12 shows a glass of hot milk immersed in cold water. After a while the milk is ready to drink.

Diagram 12 menunjukkan segelas susu panas direndam dalam air sejuk. Selepas seketika susu itu boleh diminum.

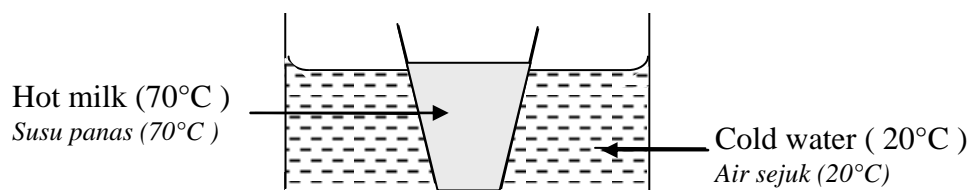


Diagram 12

Rajah 12

The hot milk becomes cold due to

Susu panas menjadi sejuk kerana

- A radiation
sinaran
- B convection
perolakan
- C conduction
pengaliran
- D thermal equilibrium
keseimbangan terma

22 Diagram 13 shows a boy holding a sparkling firework.

Rajah 13 menunjukkan seorang budak lelaki memegang sebatang bunga api.



Diagram 13

Rajah 13

The spark from the firework which falls on the boy's hand does not produce bad burns because the spark

Percikan bunga api yang jatuh ke atas tangan budak itu tidak menyebabkan lecuran yang teruk kerana percikan bunga api

- A is at a lower temperature
berada pada suhu yang rendah
 - B releases light, not heat
membebaskan cahaya, bukan haba
 - C contains a small amount of heat
mengandungi jumlah haba yang sedikit
 - D has a low specific heat capacity
mempunyai muatan haba tentu yang rendah
- 23 A 60 W immersion heater is used to boil liquid X. After boiling for 3 minutes, 5 g of the liquid X changes to steam.
Pemanas rendam 60 W memanaskan cecair X sehingga mendidih. Setelah mendidih selama 3 minit, 5 g cecair X berubah menjadi stim.

Which expression determines the specific latent heat of vaporization of liquid X?

Ungkapan yang manakah menentukan haba pendam tentu pengewapan cecair X?

- A $(60 \times 3) / 0.005 \text{ J kg}^{-1}$
- B $(60 \times 180 \times 0.005) \text{ J kg}^{-1}$
- C $0.005 / (60 \times 180) \text{ J kg}^{-1}$
- D $(60 \times 180) / 0.005 \text{ J kg}^{-1}$

- 24 Table 1 shows the volume and temperature of a certain mass of gas kept at a constant pressure.

Jadual 1 menunjukkan isipadu dan suhu suatu jisim gas pada tekanan tetap.

V / cm^3	$T / ^\circ\text{C}$
50	30
100	W

Table 1
Jadual 1

Determine W in Table 1.

Tentukan W dalam Jadual 1

- A 151.5 °C
 - B 333.0 °C
 - C 400.2 °C
 - D 606.0 °C
- 25 What phenomenon produces an image on a plane mirror ?

Fenomena apakah yang menghasilkan imej di atas cermin satah ?

- A Reflection
Pantulan
- B Refraction
Pembiasan
- C Diffraction
Belauan
- D Interference
Interferens

- 26 Diagram 14 shows a light ray, R, directed into a glass block.
Rajah 14 menunjukkan alur sinar cahaya, R, ditujukan pada blok kaca.

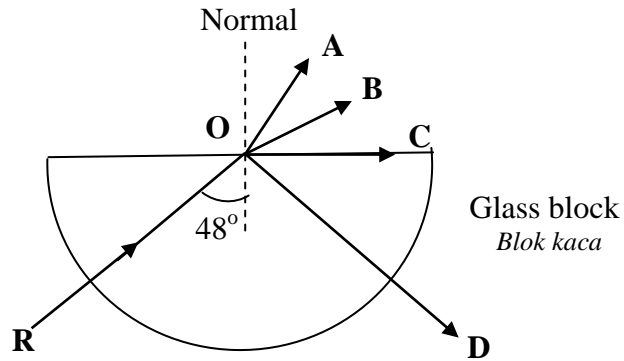


Diagram 14
Rajah 14

The critical angle of the glass is 46° . In which direction does the light travel after point O when the incident angle is 48° ?
Sudut genting blok kaca ialah 46° . Dalam arah manakah cahaya akan merambat selepas titik O jika sudut tuju adalah 48° ?

- 27 Diagram 15 shows the formation of an image of an object by a convex lens.
Rajah 15 menunjukkan pembentukan imej bagi sebuah kanta cembung.

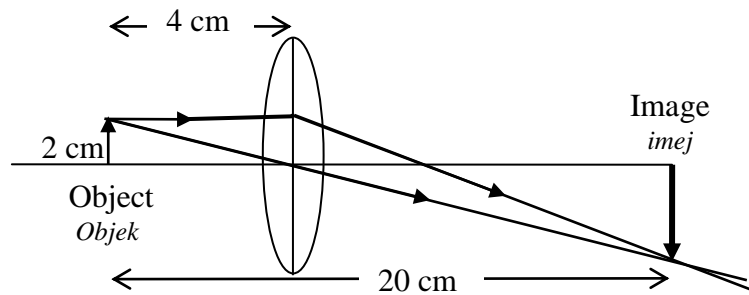


Diagram 15
Rajah 15

If the height of the object is 2 cm, what is the height of the image?
Jika tinggi objek ialah 2 cm, berapakah tinggi imej?

- A 4.0 cm
- B 5.0 cm
- C 8.0 cm
- D 10.0 cm

- 28 Diagram 16 shows a wave pattern.
Rajah 16 menunjukkan satu corak gelombang

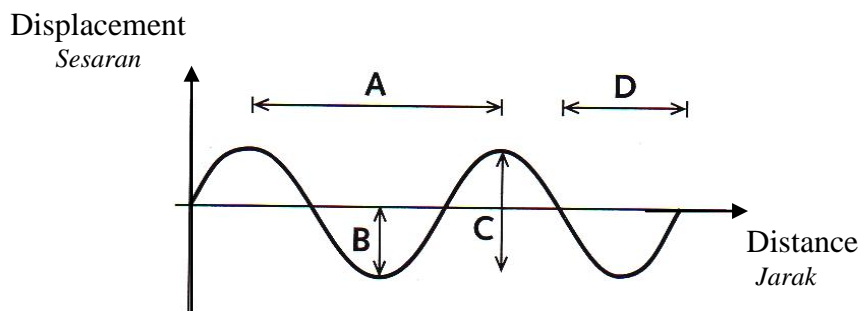


Diagram 16
Rajah 16

Which of the distances labelled **A**, **B**, **C** or **D**, represents one wavelength?
Antara jarak berlabel **A**, **B**, **C** dan **D**, yang manakah mewakili satu panjang gelombang?

- 29 Diagram 17 shows a ship in front of a cliff. It produces a loud sound which travels at a velocity of 330 m s^{-1} . An echo is heard 4 seconds later.
Rajah 17 menunjukkan sebuah kapal di hadapan sebuah tebing. Ia menghasilkan bunyi yang kuat yang merambat pada kelajuan 330 m s^{-1} . Gema kedengaran 4 saat kemudian.

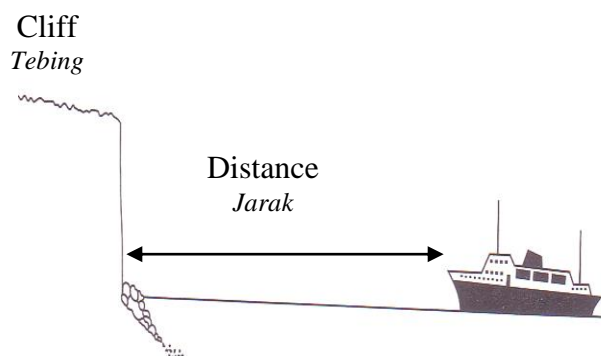


Diagram 17
Rajah 17

Calculate the distance between the ship and the cliff.
Hitung jarak antara kapal dan tebing.

- A 82.5 m
- B 330.0 m
- C 660.0 m
- D 1 200.0 m

- 30 Which of the following describes the changes in velocity, wavelength and frequency when water waves propagate from shallow to deep water?

Antara yang berikut, yang manakah menerangkan perubahan halaju, panjang gelombang dan frekuensi apabila gelombang air merambat dari kawasan air cetek ke kawasan air dalam?

	Velocity <i>Halaju</i>	Wave length <i>Jarak gelombang</i>	Frequency <i>Frekuensi</i>
A	Increases <i>Bertambah</i>	Increases <i>Bertambah</i>	No change <i>Tidak berubah</i>
B	Decreases <i>Berkurang</i>	Increases <i>Bertambah</i>	Decreases <i>Berkurang</i>
C	Increases <i>Bertambah</i>	Decreases <i>Berkurang</i>	Increases <i>Bertambah</i>
D	No change <i>Tidak berubah</i>	No change <i>Tidak berubah</i>	No change <i>Tidak berubah</i>

- 31 Diagram 18 shows the diffraction of water waves in a ripple tank.

Rajah 18 menunjukkan belauan gelombang air dalam tangki riak.

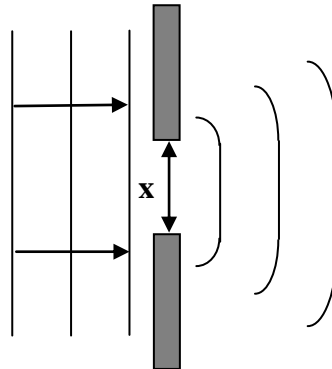


Diagram 18
Rajah 18

When x decreases, the effect of diffraction

Apabila x berkurang, kesan belauan

- A** decreases
berkurang
- B** increases
bertambah
- C** remains the same
tidak berubah

- 32 Diagram 19 shows an anti-noise generator placed on the runway to reduce the noise produced.

Rajah 19 menunjukkan penjana anti-bunyi diletakkan di atas landasan kapal terbang untuk mengurangkan hingar yang dihasilkan.

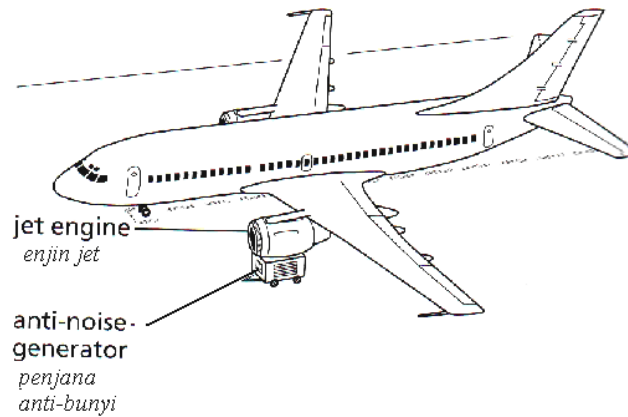


Diagram 19

Rajah 19

Which wave phenomenon explains the above situation?

Fenomena gelombang yang manakah menerangkan situasi di atas?

- A Refraction
Pembiasan
- B Reflection
Pantulan
- C Diffraction
Belauan
- D Interference
Interferens

33 Diagram 20 shows the displacement-time graph for wave P, Q and R
Rajah 20 menunjukkan graf sesaran lawan-masa bagi gelombang P, Q dan R

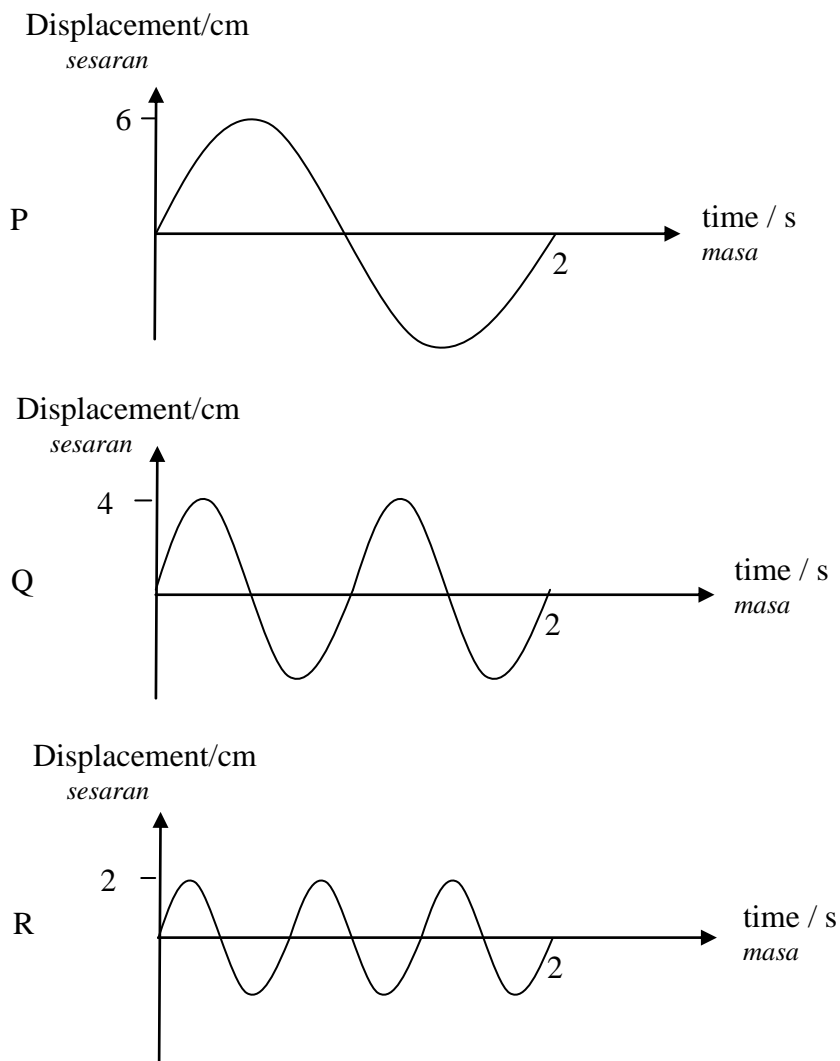


Diagram 20
Rajah 20

Arrange the waves P, Q and R from the highest to the lowest pitch.
Susun gelombang P, Q dan R berdasarkan kelangsingan dari tinggi ke rendah.

- A PQR
- B RQP
- C QRP
- D PRQ

34 Diagram 21 shows a sheet of photographic film placed under a patient's leg to photograph a broken bone.

Rajah 21 menunjukkan sekeping lapisan filem fotograf diletakkan di bawah kaki pesakit untuk mengambil gambar tulang yang patah.

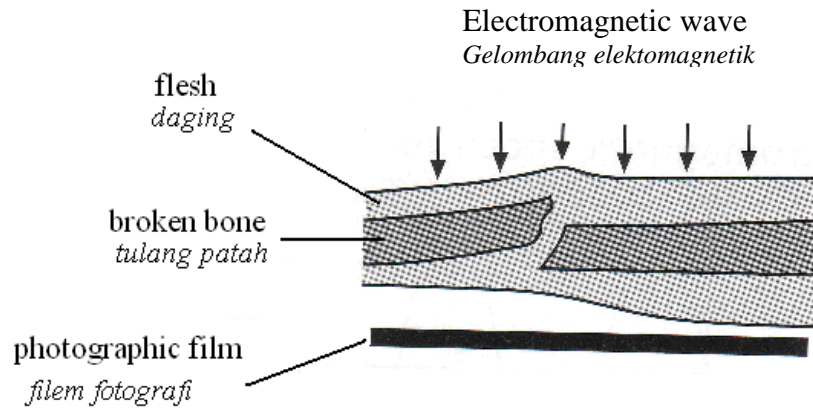


Diagram 21
Rajah 21

Which of the following electromagnetic wave is the most suitable to be used?

Antara gelombang elektromagnet berikut, yang manakah paling sesuai untuk digunakan?

- A X – ray
Sinar X
- B Ultraviolet ray
Sinar ultra ungu
- C Infrared ray
Sinar infra merah
- D Gamma ray
Sinar gamma

- 35 Diagram 22 shows the metal dome of a Van de Graaf generator connected to a microammeter. When the generator is switched on, the pointer of the microammeter will deflect.

Rajah 22 menunjukkan kubah logam penjana Van de Graaf disambungkan pada microammeter. Apabila penjana dihidupkan, penunjuk mikroammeter akan terpesong.

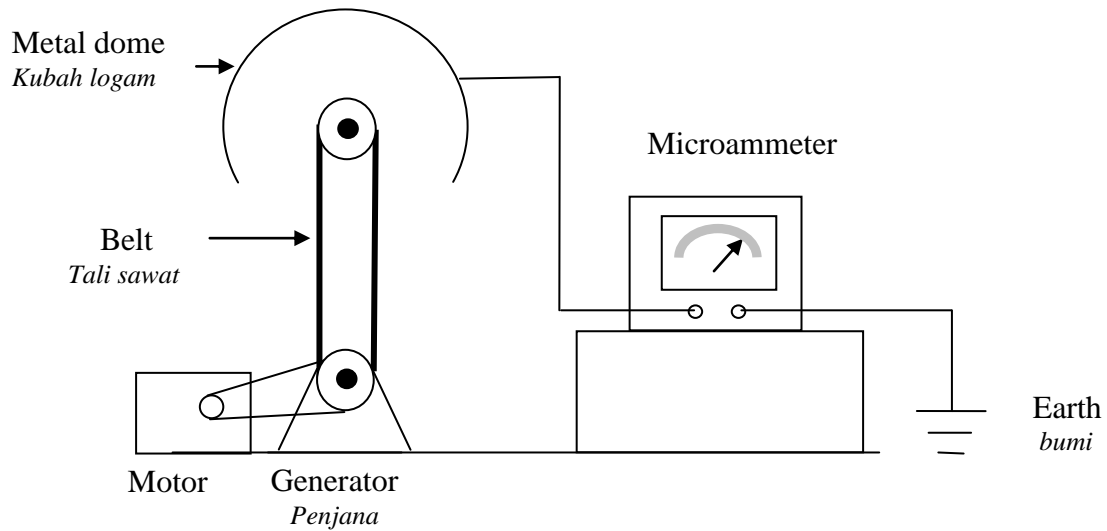


Diagram 22
Rajah 22

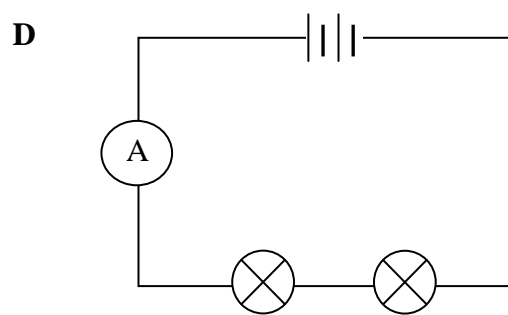
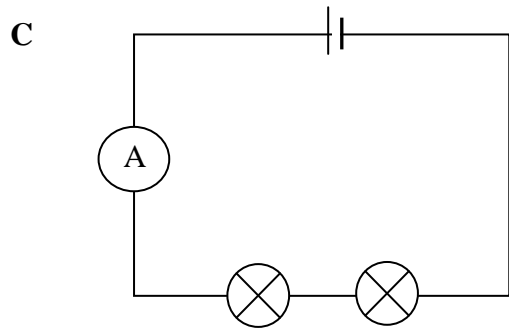
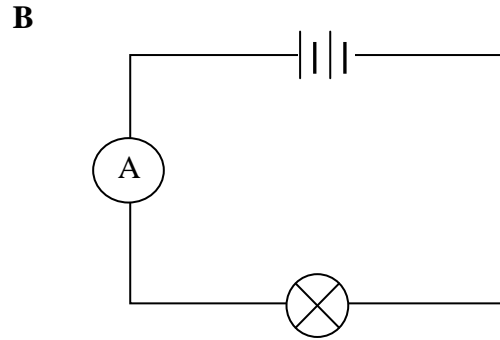
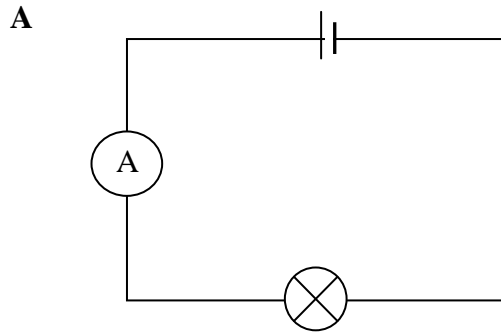
Which statement explains the deflection observed?

Pernyataan yang manakah menerangkan pesongan tersebut?

- A Electrons flow to the earth
Elektron mengalir ke bumi
- B The belt produces electron
Tali sawat menghasilkan elektron
- C Electric current flows from the metal dome to the earth
Arus elektrik mengalir dari kubah logam ke bumi
- D Electric current flows from the motor to the metal dome
Arus elektrik mengalir dari motor ke kubah logam

36 The electric circuits below consist of identical dry cells, ammeters and bulbs.
Which circuit produces the brightest light?

Litar elektrik di bawah menggunakan sel kering, ammeter dan mentol yang serupa.. Litar yang manakah menghasilkan nyalaan yang paling terang?



- 37 Diagram 23 shows a circuit with four identical bulbs and ammeters, A_1 , A_2 and A_3 .
Rajah 23 menunjukkan litar yang terdiri dari empat mentol yang serupa serta ammeter A_1 , A_2 dan A_3 .

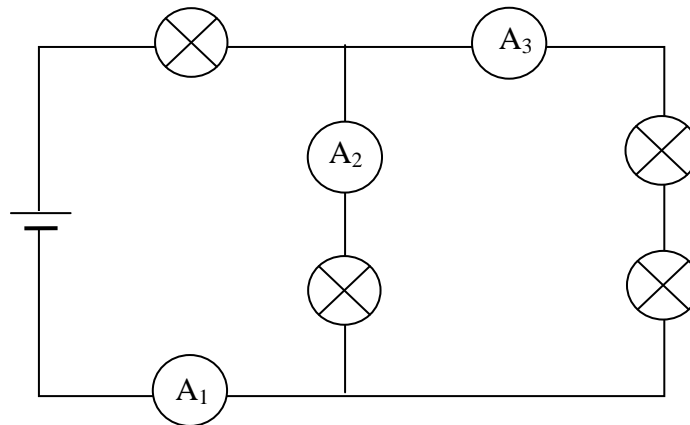


Diagram 23

Rajah 23

Which of the following statements is true?

Antara pernyataan berikut, yang manakah betul?

- A** Reading of $A_1 > A_2 > A_3$
Bacaan $A_1 > A_2 > A_3$
- B** Reading of $A_3 > A_2 > A_1$
Bacaan $A_3 > A_2 > A_1$
- C** Reading of $A_2 > A_1 > A_3$
Bacaan $A_2 > A_1 > A_3$
- D** Reading of $A_1 > A_3 > A_2$
Bacaan $A_1 > A_3 > A_2$

38 Diagram 24 shows a circuit that can be used to determine the electromotive force (e.m.f.), E , and internal resistance, r , of a cell.

Rajah 24 menunjukkan litar yang boleh digunakan untuk menentukan daya gerak elektrik (d.g.e.), E , dan rintangan dalam, r , suatu sel.

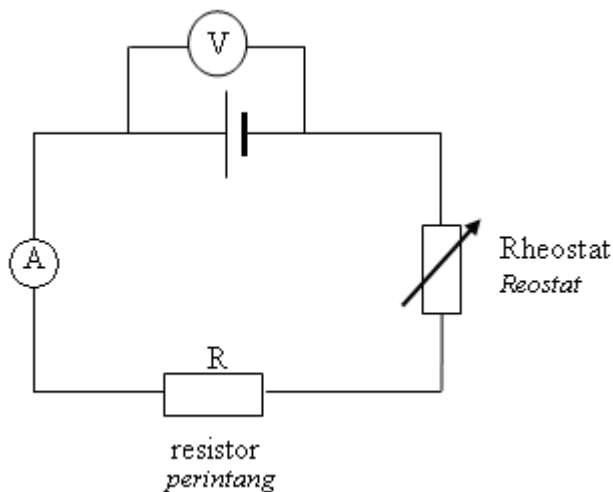
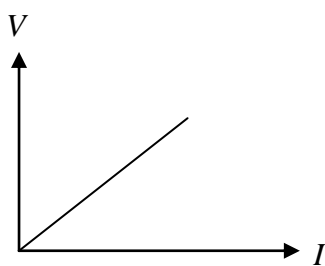


Diagram 24
Rajah 24

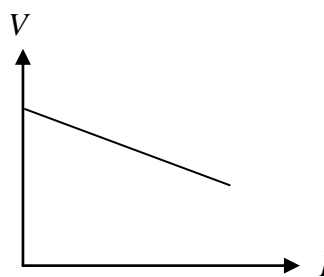
Which of the following potential difference, V against current, I graph is used to determine the values of E and r of the cell?

Manakah antara graf beza keupayaan, V melawan arus, I yang berikut digunakan untuk menentukan nilai E dan r sel tersebut?

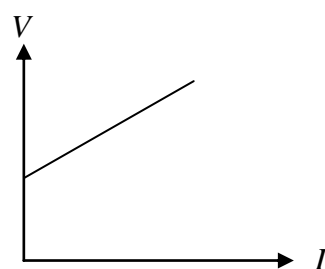
A



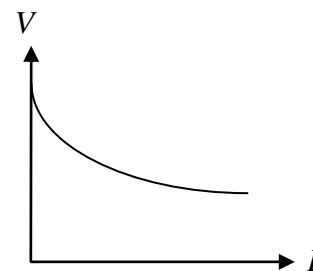
B



C



D



- 39 Diagram 25 shows a crane which is used to lift a load of mass 200 kg from the ground to a height of 10 metre in 20 seconds. What is the power generated by the crane?

Rajah 25 menunjukkan sebuah kren digunakan untuk mengangkat beban berjisim 200 kg dari permukaan tanah ke ketinggian 10 meter dalam masa 20 saat. Apakah kuasa yang dijanakan oleh kren tersebut?



Diagram 25
Rajah 25

- A 100 W
- B 1 000 W
- C 4 000 W
- D 8 000 W

40 Diagram 26 shows a conductor passing through a piece of cardboard.
Rajah 26 menunjukkan suatu konduktor melalui sekeping kadbod.

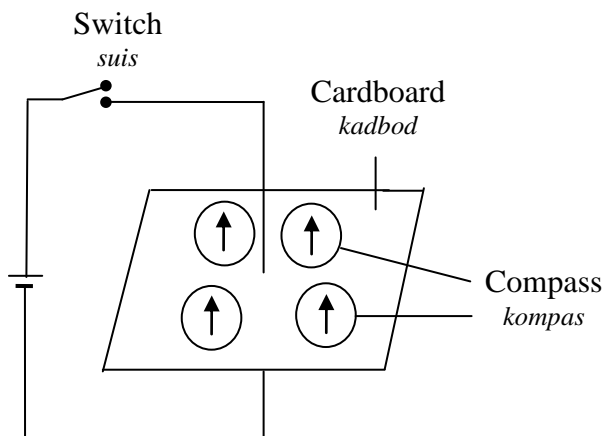
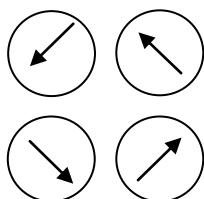


Diagram 26
Rajah 26

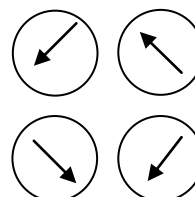
Which of the following shows the correct direction of the compasses when the switch is on?

Antara yang berikut, rajah yang manakah menunjukkan arah kompas yang betul bila suis dihidupkan?

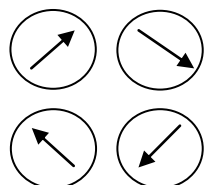
A



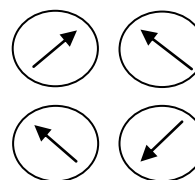
B



C



D



- 41 Diagram 27 shows the direction of motion of a copper wire when current flows through it.

Rajah 27 menunjukkan arah gerakan satu dawai kuprum apabila arus mengalir melaluinya.

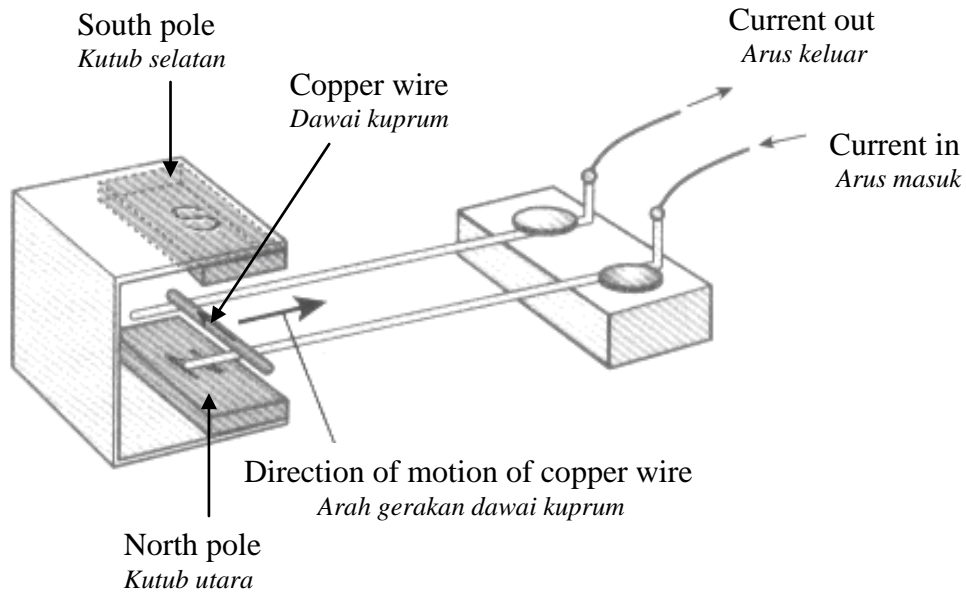


Diagram 27
Rajah 27

In which direction will the copper wire move when the current is reversed?

Ke arah manakah dawai kuprum itu akan bergerak bila arus di disongsangkan?

- A To the left
Ke arah kiri
- B To the right
Ke arah kanan
- C Upwards
Ke atas
- D Downwards
Ke bawah

- 42 A bar magnet is dropped through a coil of wire as shown in Diagram 28.
Sebatang magnet bar dijatuhkan ke dalam gegelung dawai seperti yang ditunjukkan dalam Rajah 28.

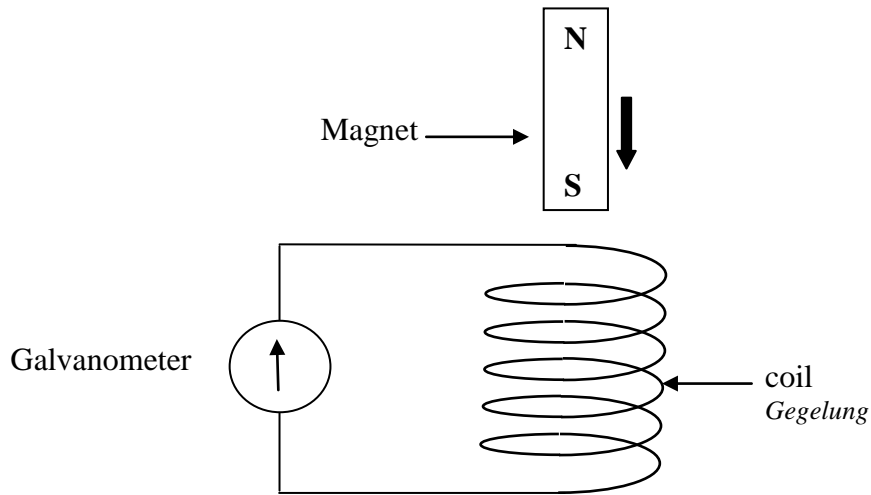


Diagram 28
Rajah 28

Which of the following actions will increase the deflection of the galvanometer pointer?

Antara yang berikut, yang manakah akan menambahkan pesongan jarum galvanometer?

- A Drop the magnet from a greater height
Jatuhkan magnet dari aras yang lebih tinggi
- B Increase the diameter of the coil
Tambahkan diameter gegelung
- C Decrease the number of turns of the coil
Kurangkan bilangan lilitan gegelung dawai
- D Reverse the pole of the magnet before dropping
Songsangkan kutub magnet sebelum dijatuhkan

- 43 Diagram 29 shows a transformer circuit.
Rajah 29 menunjukkan litar sebuah transformer.

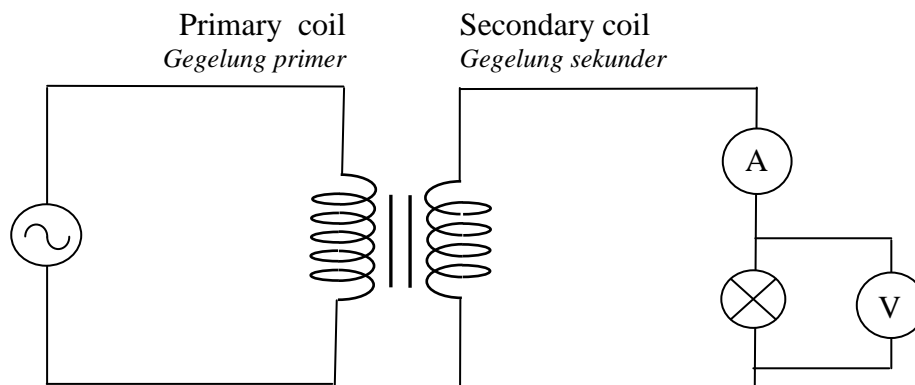


Diagram 29
Rajah 29

- What happens if the number of turns of the secondary coil is increased?
Apakah yang berlaku jika bilangan gegelung sekunder ditambahkan?
- A The electric current in the primary coil decreases
Arus elektrik dalam gegelung primer berkurang
- B The electric current in the secondary coil increases
Arus elektrik di dalam gegelung sekunder bertambah
- C The potential difference across the secondary coil increases
Beza keupayaan merentasi gegelung sekunder bertambah.
- D The potential difference across the secondary coil decreases
Beza keupayaan merentasi gegelung sekunder berkurang
- 44 Which of the following statement is **correct** about the transmission of power through the National Grid Network?
Antara pernyataan berikut yang manakah **betul** tentang penghantaran kuasa melalui Rangkaian Grid Nasional?
- A High voltage is used to reduce power loss
Beza keupayaan yang tinggi digunakan untuk mengurangkan kehilangan kuasa
- B Long cables are used to increase electrical power
Kabel yang panjang digunakan untuk menambahkan kuasa elektrik
- C Copper cables are used to increase electrical power
Kabel kuprum digunakan untuk menambahkan kuasa elektrik
- D A large current in the cable is used to reduce power loss
Arus yang besar digunakan untuk mengurangkan kehilangan kuasa

- 45 Diagram 30 shows an alternating current connected to a cathode ray oscilloscope.
Rajah 30 menunjukkan arus ulang alik disambungkan pada osiloskop sinar katod.

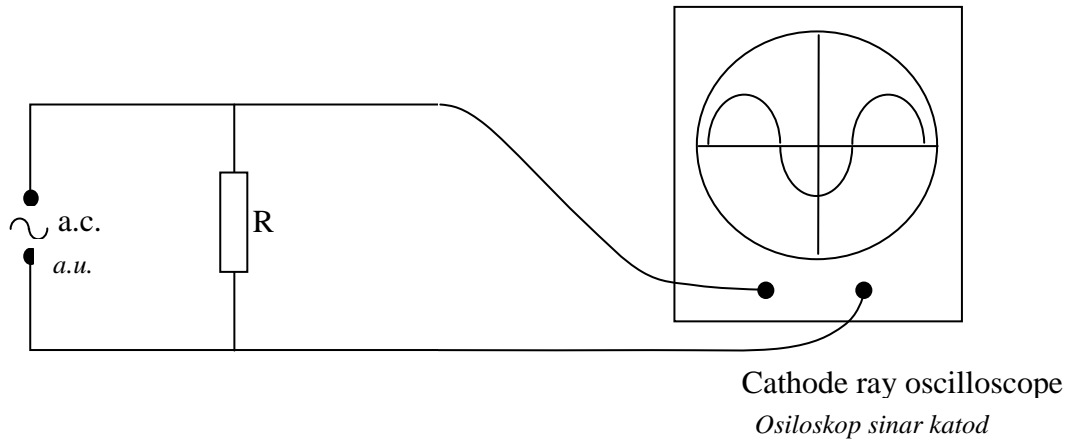
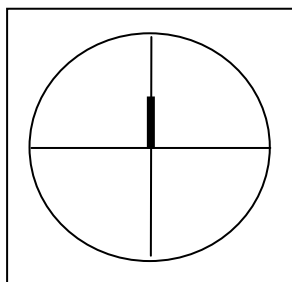


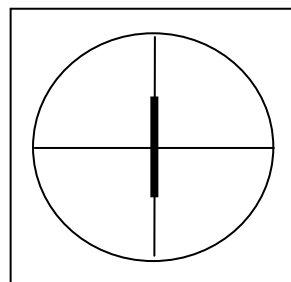
Diagram 30
Rajah 30

Which of the following will be displayed on the screen if the switch is switched off?
Antara berikut, yang manakah akan dipaparkan di atas skrin bila dasar suis dipadamkan?

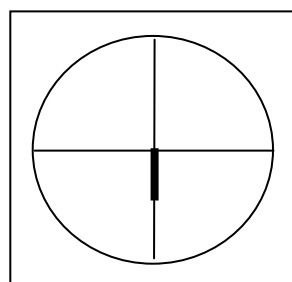
A



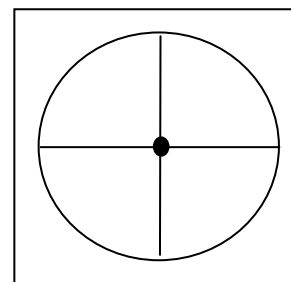
B



C



D



46 Diagram 31 shows two electric circuits.

Rajah 31 menunjukkan dua litar elektrik

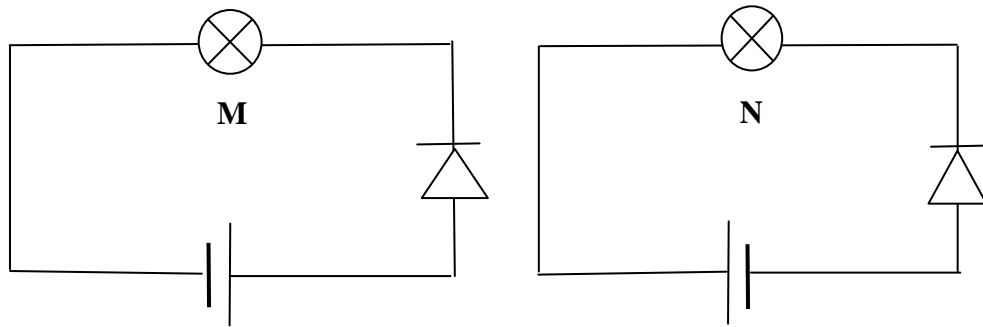


Diagram 31
Rajah 31

Which of the following is **correct** about bulb M and bulb N?

Antara berikut, yang manakah **betul** mengenai mentol M dan N?

- | | <u>M</u> | <u>N</u> |
|----------|---|---|
| A | Lights up
<i>Menyala</i> | Does not light up
<i>Tidak menyala</i> |
| B | Does not light up
<i>Tidak menyala</i> | Lights up
<i>Menyala</i> |
| C | Lights up
<i>Menyala</i> | Lights up
<i>Menyala</i> |
| D | Does not light up
<i>Tidak menyala</i> | Does not light up
<i>Tidak menyala</i> |

47 Diagram 32 shows a combination of three logic gates.
Rajah 32 menunjukkan kombinasi tiga get logik.

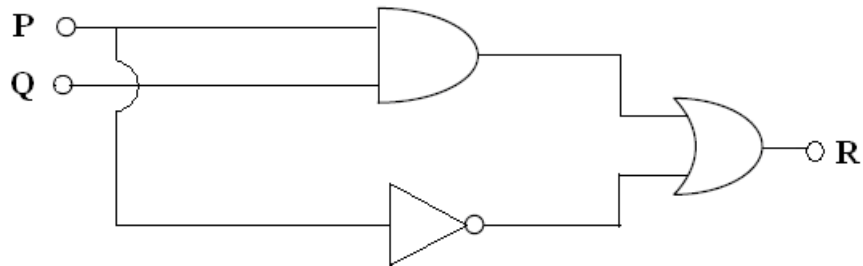


Diagram 32
Rajah 32

Which of the following is the **correct** truth table for the above circuit?
Antara berikut, jadual kebenaran manakah yang betul bagi litar di atas?

A

P	Q	R
0	0	0
0	1	0
1	0	0
1	1	1

B

P	Q	R
0	0	1
0	1	1
1	0	0
1	1	1

C

P	Q	R
0	0	0
0	1	1
1	0	0
1	1	1

D

P	Q	R
0	0	1
0	1	0
1	0	1
1	1	0

- 48 Diagram 33 shows a radioactive rays penetrating through a sheet of paper but not through a thick aluminium sheet.

Rajah 33 menunjukkan sinaran radioaktif yang dapat menembusi sehelai kertas tetapi tidak boleh menembusi sekeping aluminium yang tebal.

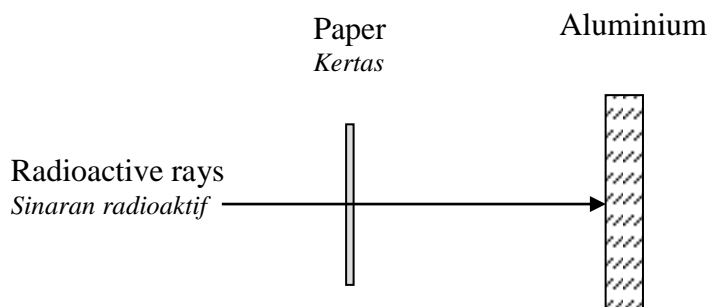


Diagram 33

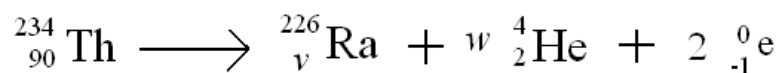
Rajah 33

What is the radiation used?

Sinar apakah yang digunakan?

- A Alpha
alfa
- B Beta
beta
- C Gamma
gamma
- 49 The following equation shows the decay of thorium-234.

Persamaan berikut menunjukkan pereputan nukleus thorium-234

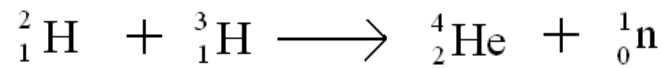


What are the values of v and w ?

Apakah nilai bagi v dan w ?

- | | <u>v</u> | <u>w</u> |
|---|-----------------------|-----------------------|
| A | 80 | 1 |
| B | 84 | 2 |
| C | 88 | 2 |
| D | 92 | 3 |

- 50 In the fusion reaction of hydrogen, the mass defect is 3.134×10^{-29} kg.
Dalam tindakbalas pelakuran hidrogen, cacat jisim ialah 3.134×10^{-29} kg.



What is the total energy released in the reaction?

(speed of light, $c = 3 \times 10^8 \text{ m s}^{-1}$)

Berapakah tenaga yang dibebaskan dalam tindakbalas tersebut?

(halaju cahaya = $3 \times 10^8 \text{ m s}^{-1}$)

- A $9.40 \times 10^{-21} \text{ J}$
- B $2.82 \times 10^{-20} \text{ J}$
- C $9.40 \times 10^{-13} \text{ J}$
- D $2.82 \times 10^{-12} \text{ J}$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES.

MAKLUMAT UNTUK CALON

1. This question paper consists of **50** questions.
Kertas soalan ini mengandungi 50 soalan.
2. Answer **all** questions.
Jawab semua soalan.
3. Each question is followed by either **three** or **four** options. Choose the best option for each question and darken the correct space on the answer sheet.
Tiap-tiap soalan diikuti oleh sama ada tiga atau empat pilihan jawapan. Pilih satu jawapan yang terbaik bagi setiap soalan dan hitamkan ruangan yang betul pada kertas jawapan anda
4. Darken only **one** space for each question.
Hitamkan satu ruangan sahaja bagi setiap soalan.
5. If you wish to change your answer, erase the darkened mark that you have made. Then, darken the space for the new answer.
Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat. Kemudian, hitamkan jawapan yang baru.
6. The diagram in the questions provided are not drawn to scale unless stated.
Gambar rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.
7. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.
8. A list of formulae is provided on page 2 and 3
Satu senarai rumus disediakan di halaman 2 dan 3