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Physics
Paper 1
September
2012
1 ¼ hours



MAKTAB RENDAH SAINS MARA

**SIJIL PELAJARAN MALAYSIA
TRIAL EXAMINATION 2012**

PHYSICS

Paper 1

One hour and fifteen minutes

DO NOT OPEN THIS QUESTION BOOKLET UNTIL TOLD TO DO SO

1. This paper is written in English and bahasa Melayu
Kertas soalan ini adalah dalam dwibahasa.
2. The question in English is written on top while the bahasa Melayu version is below.
Soalan di atas adalah dalam bahasa Inggeris dan soalan dalam bahasa Melayu terdapat di bawahnya.
3. Candidates are required to read the information at the back of the booklet.
Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.

6

This question booklet consists of 50 printed pages and 2 blank pages.

The following information may be useful. The symbols have their usual meaning.

Maklumat berikut mungkin berfaedah. Simbol-simbol mempunyai makna yang biasa.

1. $a = \frac{v-u}{t}$
2. $v^2 = u^2 + 2as$
3. $s = ut + \frac{1}{2} at^2$
4. Momentum = mv
5. $F = ma$
6. Kinetic energy / Tenaga kinetik = $\frac{1}{2} mv^2$
7. Gravitational potential energy / Tenaga keupayaan gravity = mgh
8. Elastic potential energy / Tenaga keupayaan kenyal = $\frac{1}{2} Fx$
9. $\rho = \frac{m}{V}$
10. Pressure / Tekanan, $p = h\rho g$
11. Pressure / Tekanan, $p = \frac{F}{A}$
12. Heat / Haba, $Q = mc\theta$
13. Heat / Heat, $Q = ml$
14. $\frac{pV}{T} = \text{constant} / \text{pemalar}$
15. $E = mc^2$
16. $V = f\lambda$
17. Power, $P = \frac{\text{Energy}}{\text{time}}$

 $Kuasa, P = \frac{\text{tenaga}}{\text{masa}}$
18. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

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$$19. \lambda = \frac{\alpha x}{D}$$

$$20. n = \frac{\sin i}{\sin r}$$

$$n = \frac{1}{\sin c}$$

$$21. n = \frac{\text{real depth}}{\text{apparent depth}}$$

$$n = \frac{\text{dalam nyata}}{\text{dalam ketara}}$$

$$22. Q = It$$

$$23. V = \frac{E}{Q}$$

$$24. V = IR$$

$$25. \text{Power / Kuasa, } P = IV$$

$$26. \frac{N_s}{N_p} = \frac{V_s}{V_p}$$

$$27. \text{Efficiency / Kecekapan} = \frac{I_s V_s}{I_p V_p} \times 100\%$$

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

$$29. c = 3.0 \times 10^8 \text{ m s}^{-1}$$

1 Which of the following is a unit for a derived quantity?

Manakah di antara berikut adalah unit untuk kuantiti terbitan?

- A kelvin
kelvin
- B second
second
- C newton
newton
- D ampere
ampere

2 Diagram 1 shows a conical flask.

Rajah 1 menunjukkan sebuah kelalang kon.

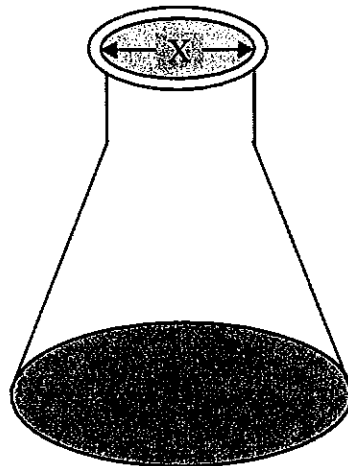


Diagram 1

Rajah 1

Which of the following instruments is the most suitable for measuring X?

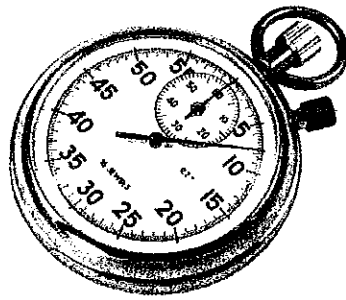
Manakah di antara alat berikut paling sesuai untuk mengukur X?

- A Micrometer screw gauge
Tolak skru mikrometer
- B Vernier calipers
Angkup vernier
- C Measuring tape
Pita pengukur
- D Metre rule
Pembaris meter

3 Which of the following instruments can measure a vector quantity?

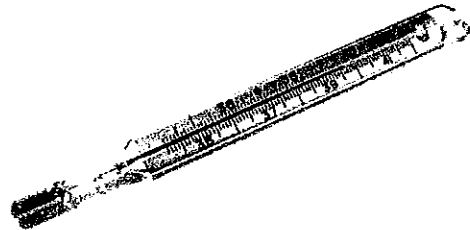
Alat yang manakah boleh mengukur kuantiti vektor?

A



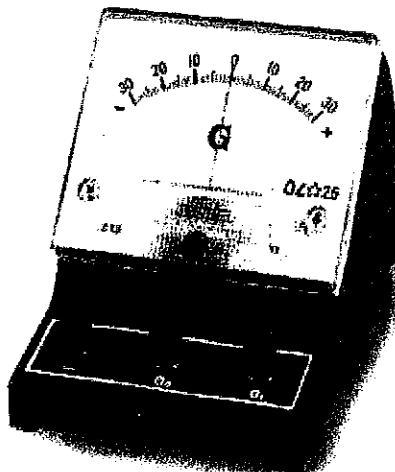
Stop watch
Jam randik

B



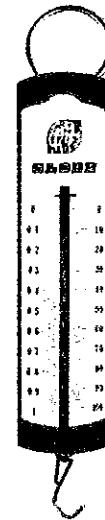
Thermometer
Termometer

C



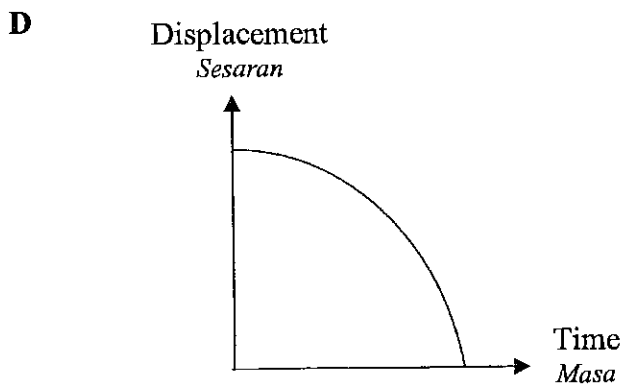
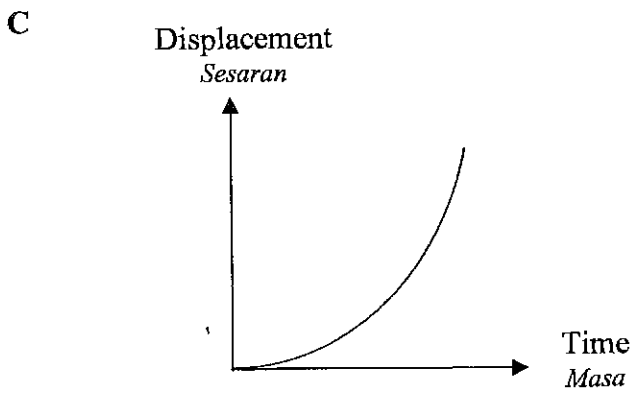
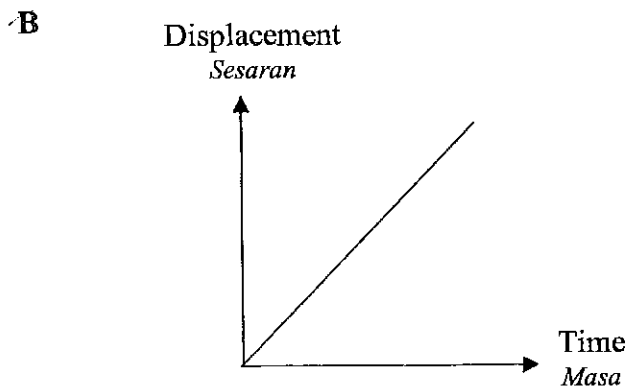
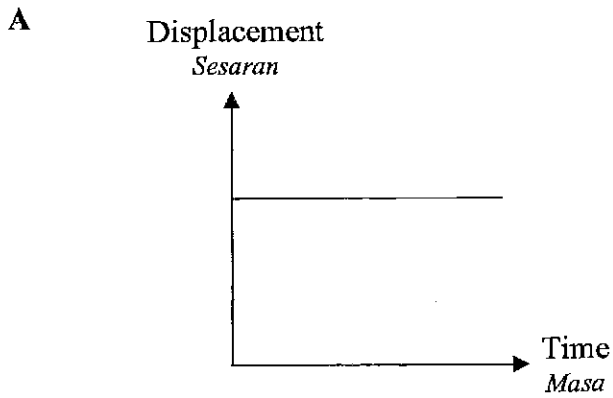
Galvanometer
Galvanomer

D



Spring balance
Neraca spring

- 4 Which displacement-time graph represents the motion of a car with constant velocity?
Graf sesaran-masa manakah mewakili pergerakan sebuah kereta yang bergerak dengan halaju seragam?



5 Diagram 2 shows two cars colliding.

Rajah 2 menunjukkan perlanggaran dua buah kereta.



Diagram 2
Rajah 2

Which physical quantity is conserved after collision?

Kuantiti fizik manakah yang diabadikan selepas perlanggaran?

- A Velocity
Halaju
- B Momentum
Momentum
- C Kinetic energy
Tenaga kinetik
- D Impulsive force
Daya impuls

- 6 Diagram 3 shows two weights connected over a table by a rope over smooth pulleys.
Rajah 3 menunjukkan dua pemberat dihubungkan dengan tali merentasi meja dan melalui takal licin.

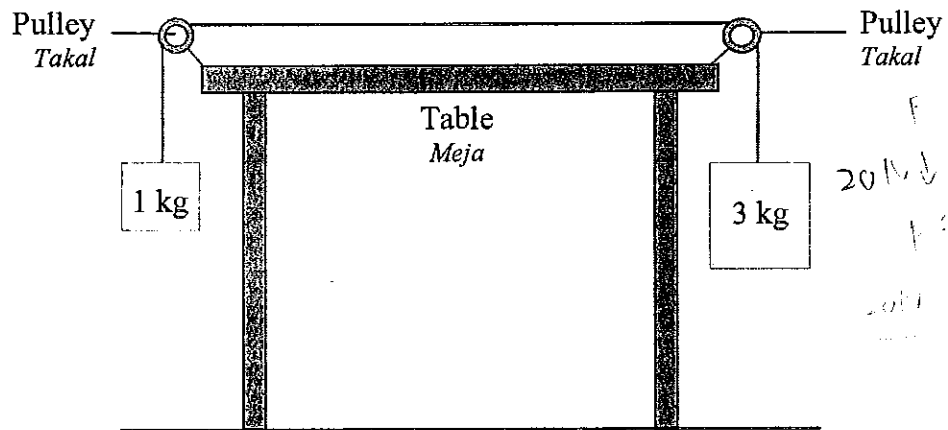


Diagram 3
Rajah 3

Based on Diagram 3, what is the acceleration of the weights?

Berdasarkan Rajah 3, berapakah pecutan bagi pemberat-pemberat tersebut?

- A 5.0 m s^{-2}
- B 6.7 m s^{-2}
- C 10.0 m s^{-2}
- D 20.0 m s^{-2}

- 7 Diagram 4 shows eggs placed on the egg trays. The trays are placed in a lorry for delivery.

Rajah 4 menunjukkan telur di atas rak telur. Rak dimasukkan ke dalam lori untuk penghantaran.

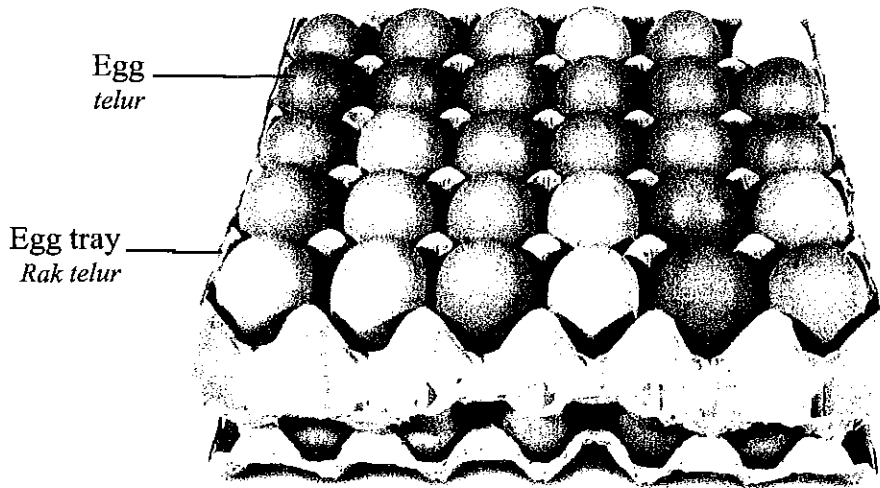


Diagram 4
Rajah 4

The function of the egg trays is to increase

Fungsi penggunaan rak telur adalah untuk meningkatkan

- A impulse
impuls
- B momentum
momentum
- C time of impact
masa hentaman
- D impulsive force
daya impuls

- 8 Diagram 5 shows an astronaut who has a mass of 60 kg and he weighs 102 N on the moon.

Rajah 5 menunjukkan seorang angkasawan yang mempunyai jisim 60 kg dan berat 102 N di bulan.

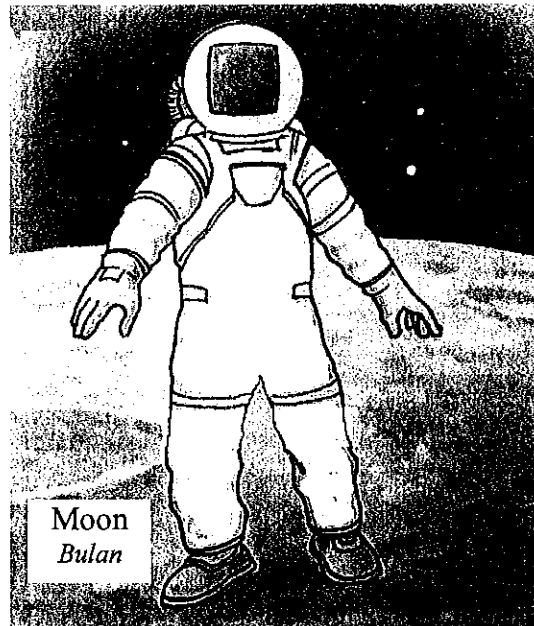


Diagram 5
Rajah 5

What is the gravitational field strength on the surface of the moon?

Apakah kekuatan medan graviti pada permukaan bulan?

- A 0.3 N kg^{-1}
- B 1.7 N kg^{-1}
- C 9.1 N kg^{-1}
- D 9.8 N kg^{-1}

- 9 Diagram 6 shows a shoe on a shoe stand. The forces W , F and R acting on the shoe are in equilibrium.

Rajah 6 menunjukkan kasut berada di atas pemegang kasut. Daya-daya W , F dan R yang bertindak ke atas kasut berada dalam keseimbangan.

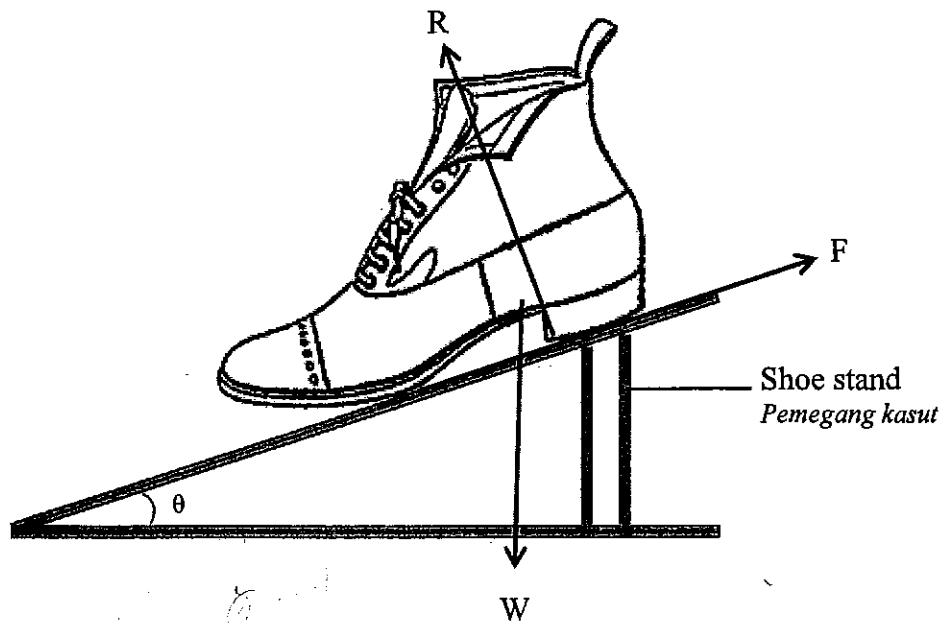


Diagram 6
Rajah 6

Which equation is **correct** about the forces acting on the shoe?

Persamaan manakah yang **betul** tentang daya-daya yang bertindak ke atas kasut tersebut?

- A $F = W \cos \theta$
- B $W = F \sin \theta$
- C $R = W \cos \theta$
- D $R \cos \theta = F \sin \theta$

- 10 Diagram 7 shows a stone being pulled using a sling shot. The rubber cord has a force constant of 300 N m^{-1} . It is pulled to an extension of 20.0 cm from its original length.

Rajah 7 menunjukkan sebiji batu yang ditarik menggunakan sebatang lastik. Tali getah tersebut mempunyai pemalar daya 300 N m^{-1} . Ia telah ditarik 20.0 cm daripada panjang asalnya.

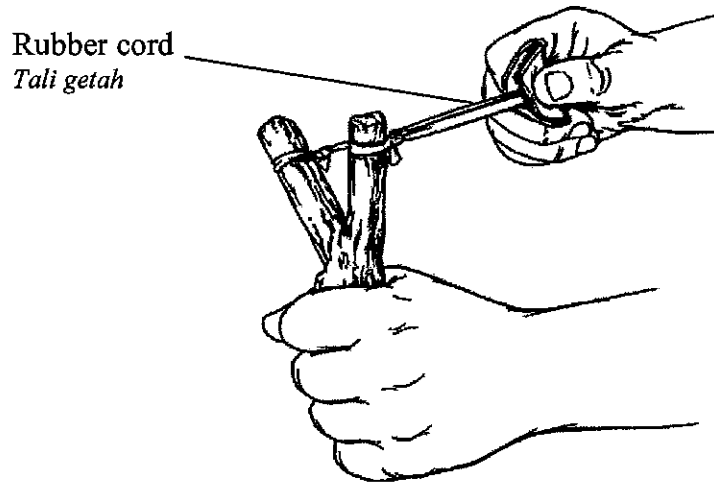


Diagram 7
Rajah 7

What is the elastic potential energy stored in the rubber cord?

Apakah tenaga keupayaan kenyal yang tersimpan dalam tali getah tersebut?

- A 6 J
- B 12 J
- C 15 J
- D 30 J

11 Diagram 8 shows a bullet train.

Rajah 8 menunjukkan sebuah keretapi laju.

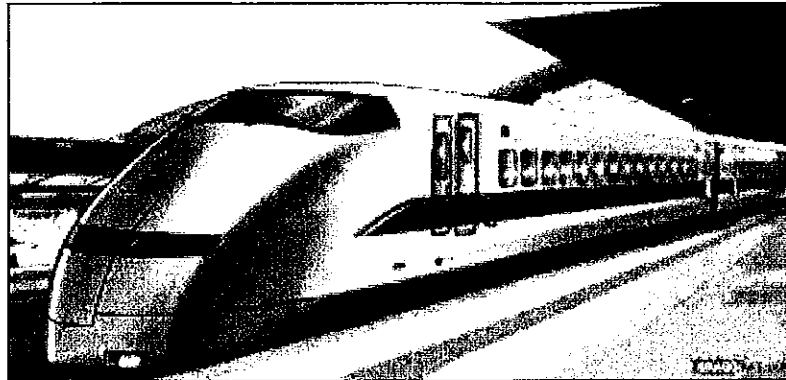


Diagram 8
Rajah 8

The bullet train has high efficiency because of

Keretapi laju itu mempunyai kecekapan yang tinggi kerana

- A its high speed
kelajuannya yang tinggi
- B its high power
kuasanya yang tinggi
- C less air resistance
kurangnya rintangan udara
- D less energy loss
kurangnya kehilangan tenaga

12 Diagram 9 shows a baby in a spring cradle.

Rajah 9 menunjukkan seorang bayi di dalam buaian spring..

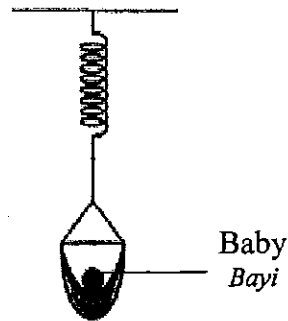


Diagram 9
Rajah 9

Which spring arrangement is the most suitable for a bigger baby?
 (All springs are identical)

Susunan spring yang manakah paling sesuai untuk bayi yang lebih besar?
 (Semua spring adalah serupa)

	Spring arrangement <i>Susunan spring</i>	Reason <i>Sebab</i>
A		Smaller spring constant <i>Pemalar spring lebih kecil</i>
B		Bigger spring constant <i>Pemalar spring lebih besar</i>
C		Bigger spring constant <i>Pemalar spring lebih besar</i>
D		Smaller spring constant <i>Pemalar spring lebih kecil</i>

13 Diagram 10 shows a water dam at a hydroelectric power station.

Rajah 10 menunjukkan empangan air di sebuah stesen janakuasa hidroelektrik.

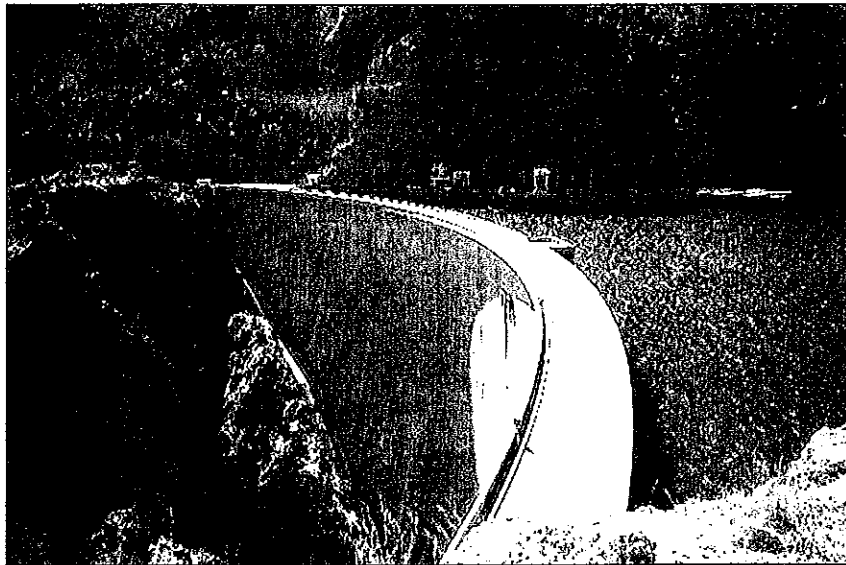
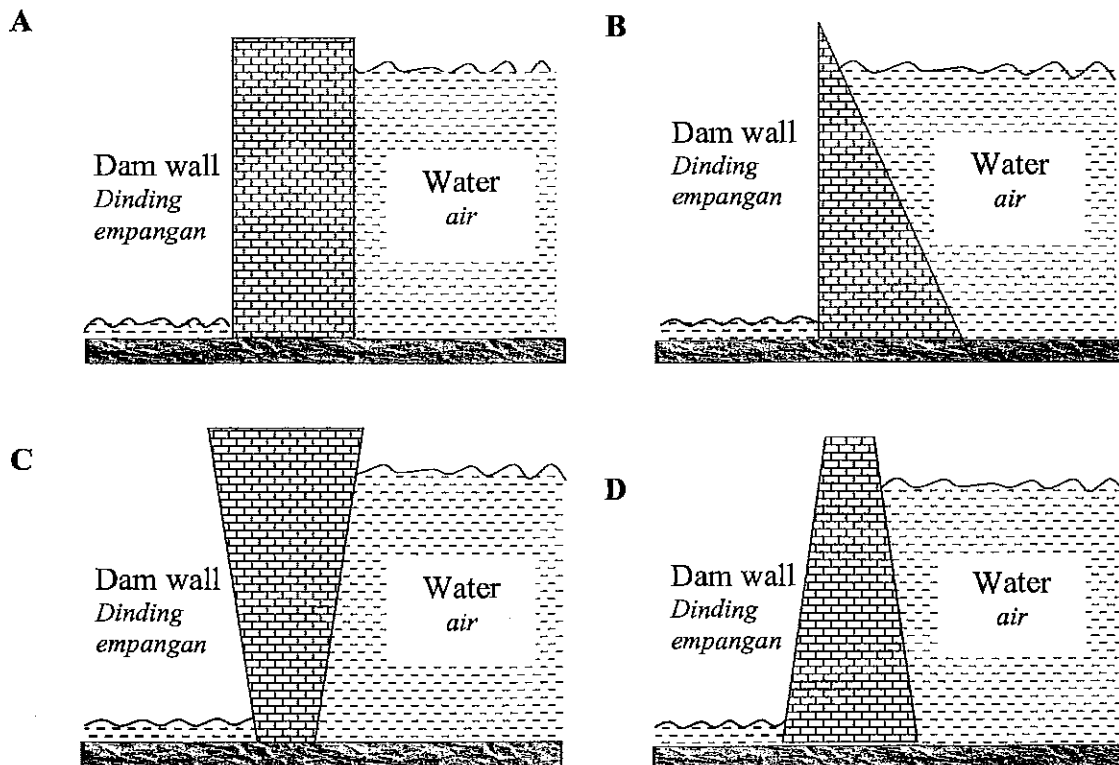


Diagram 10
Rajah 10

Which is the most suitable design for a water dam?

Rekabentuk manakah yang paling sesuai untuk sebuah empangan air?



14 Diagram 11 shows air bubbles released by a scuba diver.

Rajah 11 menunjukkan gelembung-gelembung udara yang dibebaskan oleh seorang penyelam skuba.

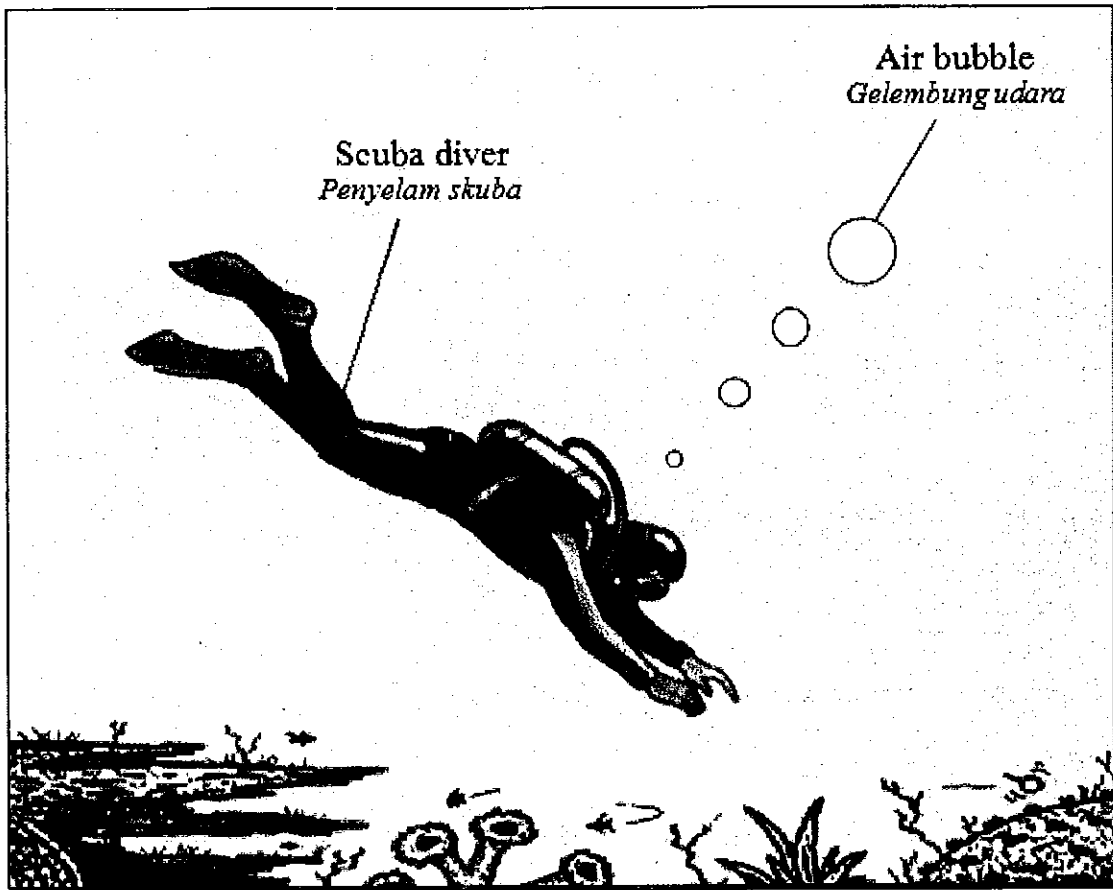


Diagram 11
Rajah 11

What happens to the pressure in the air bubbles when they rise to the water surface?

Apakah yang berlaku kepada tekanan dalam gelembung-gelembung udara tersebut apabila ia naik ke permukaan air?

- A Decreases
Berkurang
- B Increases
Meningkat
- C Unchanged
Tiada perubahan

15 Which of the following diagrams shows an application of Pascal's principle?

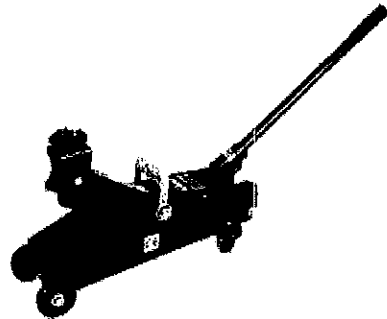
Manakah di antara rajah-rajah berikut menunjukkan aplikasi prinsip Pascal?

A



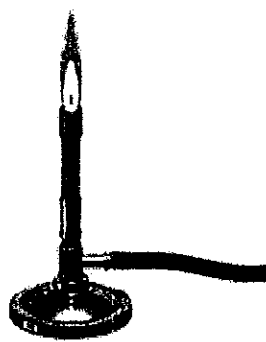
Toilet plunger
Pelocok tandas

B



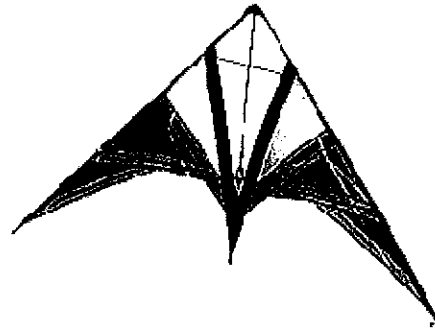
Car jack
Jek kereta

C



Bunsen burner
Penunu bunsen

D



Kite
Layang-layang

16 Diagram 12 shows a man on a raft floating on a river.

Rajah 12 menunjukkan seorang lelaki di atas sebuah rakit yang terapung di sungai.



Diagram 12
Rajah 12

Which statement is **correct** about the water displaced?

Pernyataan yang manakah betul tentang air yang tersesar?

- A weight of water displaced = weight of man + weight of raft
berat air yang disesarkan = berat lelaki + berat rakit
- B weight of water displaced > weight of man + weight of raft
berat air yang disesarkan > berat lelaki + berat rakit
- C volume of water displaced = weight of man + weight of raft
Isipadu air yang disesarkan = berat lelaki + berat rakit
- D volume of water displaced > weight of man + weight of raft
Isipadu air yang disesarkan > berat lelaki + berat rakit

17 Diagram 13 shows a cross section of an aeroplane's wing.

Rajah 13 menunjukkan keratan rentas sayap sebuah kapal terbang.

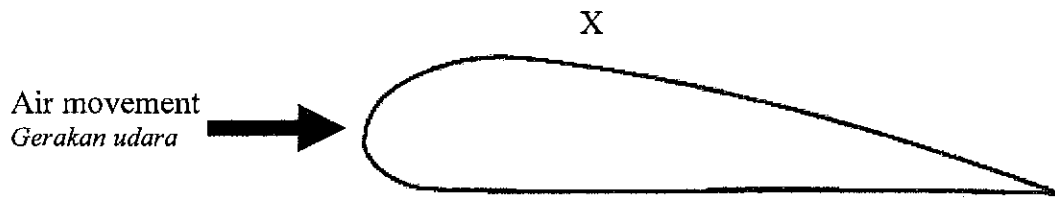


Diagram 13
Rajah 13

Which of the following is **correct** about the speed and pressure of air at point X?

Antara berikut, yang manakah yang betul mengenai laju dan tekanan udara di titik X?

	Speed <i>Kelajuan</i>	Pressure <i>Tekanan</i>
A	Low <i>Rendah</i>	Low <i>Rendah</i>
B	Low <i>Rendah</i>	High <i>Tinggi</i>
C	High <i>Tinggi</i>	Low <i>Rendah</i>
D	High <i>Tinggi</i>	High <i>Tinggi</i>

- 18 Diagram 14 shows the inside of a refrigerator.
Rajah 14 menunjukkan bahagian dalam sebuah peti sejuk.



Diagram 14
Rajah 14

Name the physics concept involved where food remains cool in the refrigerator.
Namakan konsep fizik yang terlibat di mana makanan kekal sejuk dalam peti sejuk.

- A Thermal equilibrium
Keseimbangan terma
- B Thermodynamics
Termodinamik
- C Thermal energy
Tenaga terma
- D Thermometry
Termometri

19 Which of the following is the S.I. unit for specific heat capacity?

Manakah antara berikut ialah unit S.I. bagi muatan haba tentu?

- A J kg K
- B $J\ kg^{-1}\ K$
- C $J\ kg^{-1}\ K^{-1}$
- D $J\ kg\ K^{-1}$

20 Diagram 15 shows 500 g of boiling water being heated using an immersion heater of 1000 W.

Rajah 15 menunjukkan 500 g air mendidih yang dipanaskan menggunakan pemanas rendam 1000 W.

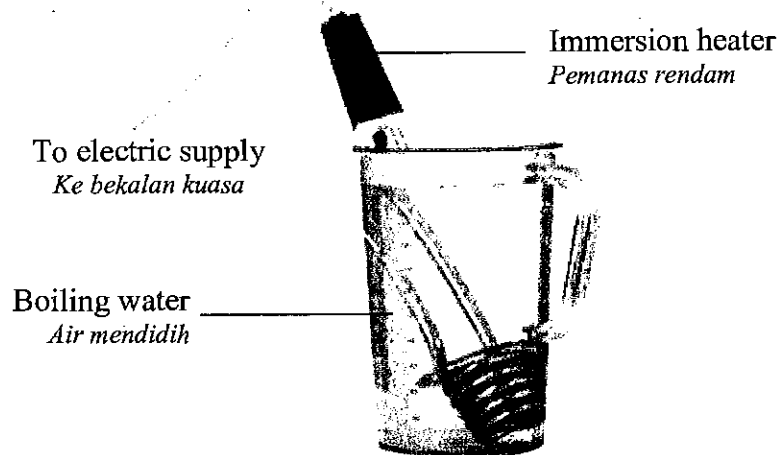


Diagram 15
Rajah 15

How long does it take for half of the boiling water to vapourise?
(Specific latent heat of vapourisation of water = $2.26 \times 10^6\ J\ kg^{-1}$).
Assume there is no heat lost to the surrounding.

*Berapa lamakah masa yang diambil untuk separuh daripada air mendidih bertukar menjadi wap?
(Haba pendam tentu pengewapan = $2.26 \times 10^6\ J\ kg^{-1}$).
Anggapkan tiada haba hilang ke persekitaran.*

- A 111 s
- B 565 s
- C 1160 s
- D 2260 s

21 Diagram 16 shows a graph of pressure against volume for a fixed mass of gas at constant temperature.

Rajah 16 menunjukkan graf tekanan melawan isipadu bagi suatu jisim gas pada suhu malar.

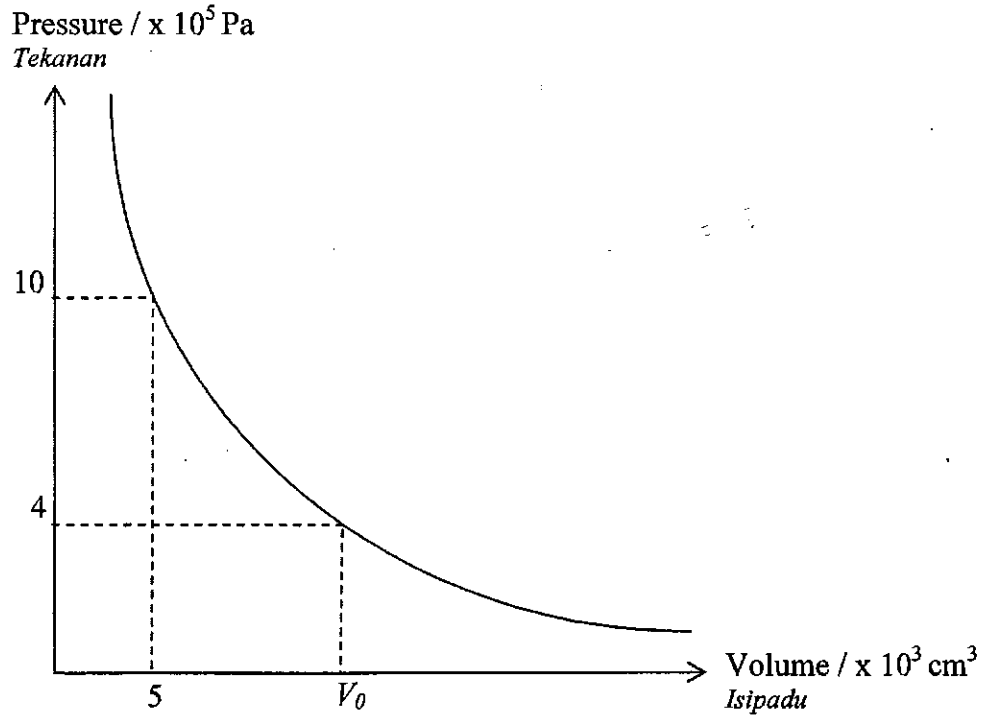


Diagram 16
Rajah 16

What is the value of V_0 ?

Apakah nilai V_0 ?

- A 7.5
- B 8.0
- C 10.5
- D 12.5

22 Diagram 17 shows a ray of light directed onto a plane mirror.

Rajah 17 menunjukkan satu sinar cahaya ditujukan pada sebuah cermin satah.

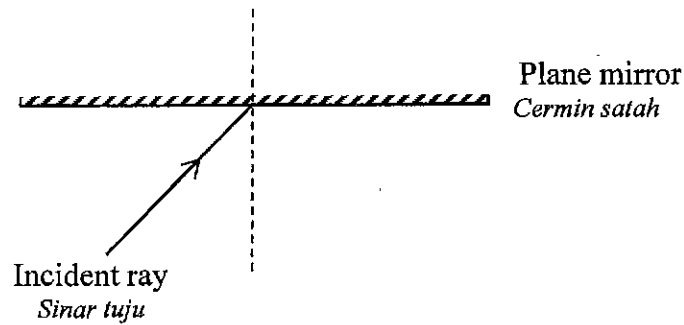
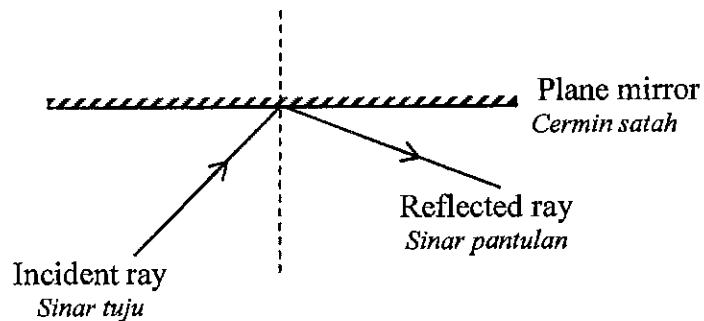


Diagram 17
Rajah 17

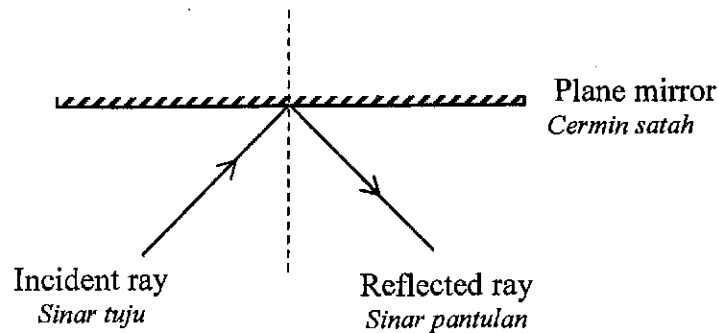
Which diagram shows the **correct** reflected ray?

Rajah manakah menunjukkan sinar pantulan yang betul?

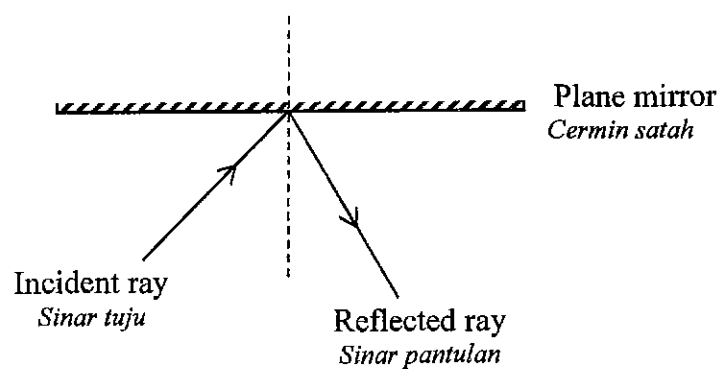
A



B



C



23 Diagram 18 shows a light ray travelling from glass to air.

Rajah 18 menunjukkan perambatan cahaya dari kaca ke udara.

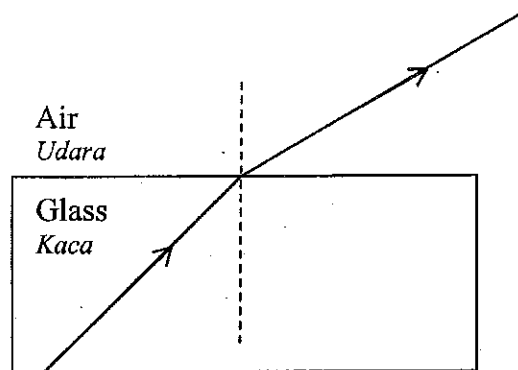


Diagram 18
Rajah 18

The refractive index of the glass can be determined using

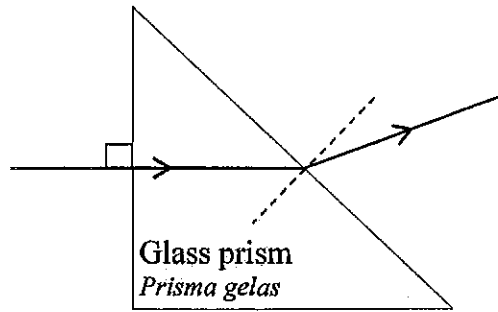
Indeks biasan kaca boleh ditentukan dengan menggunakan

- A Lenz's Law
Hukum Lenz
- B Faraday's Law
Hukum Faraday
- C Charles' Law
Hukum Charles
- D Snell's Law
Hukum Snell

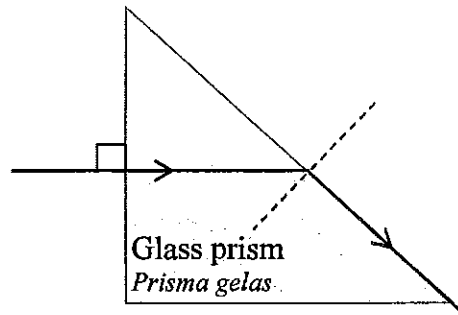
- 24 Which diagram shows the **correct** propagation of light through a prism?
(critical angle of the prism is 41.8°)

*Rajah manakah yang betul bagi perambatan cahaya melalui prisma?
(sudut genting prisma adalah 41.8°)*

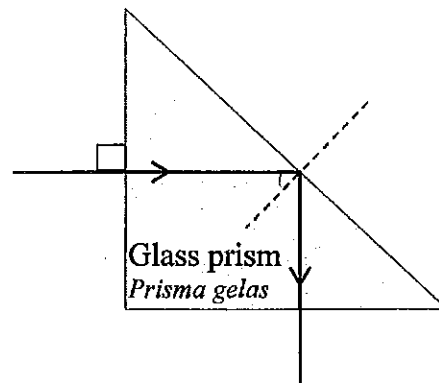
A



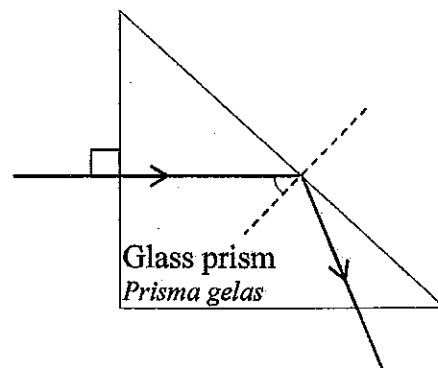
B



C



D



- 25 Diagram 19 shows an object placed 10 cm from a convex lens. An image is formed 40 cm from the lens.

Rajah 19 menunjukkan satu objek diletakkan 10 cm dari, sebuah kanta cembung. Satu imej terbentuk 40 cm dari kanta tersebut.

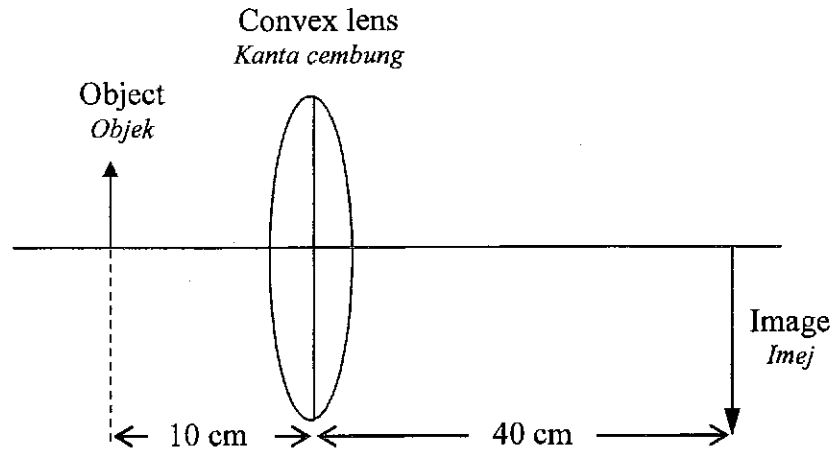


Diagram 19
Rajah 19

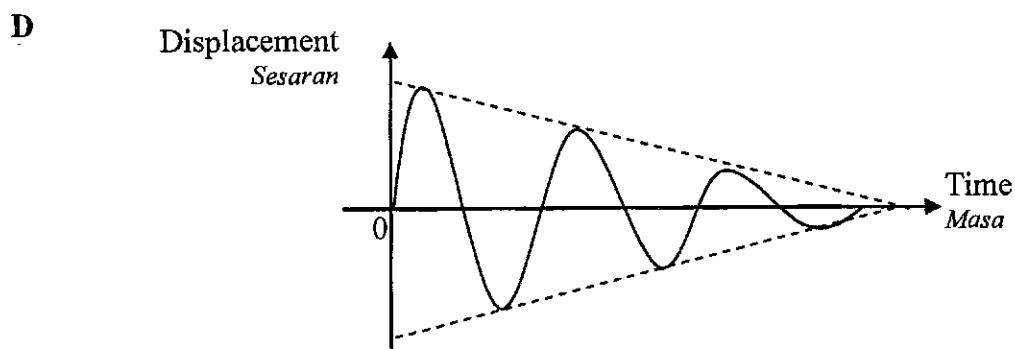
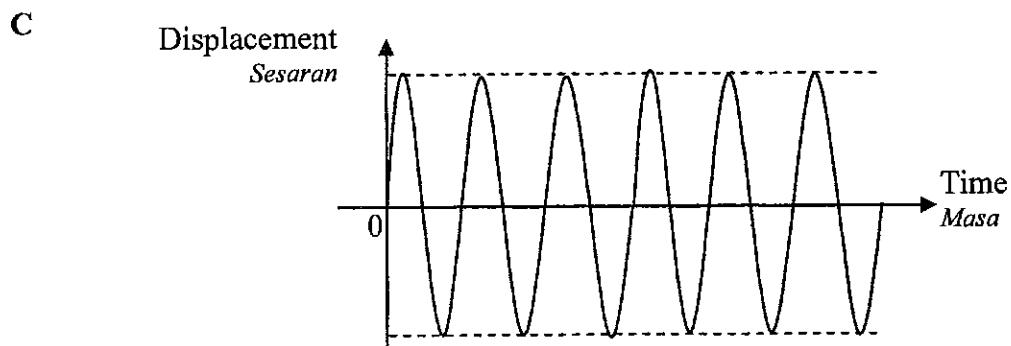
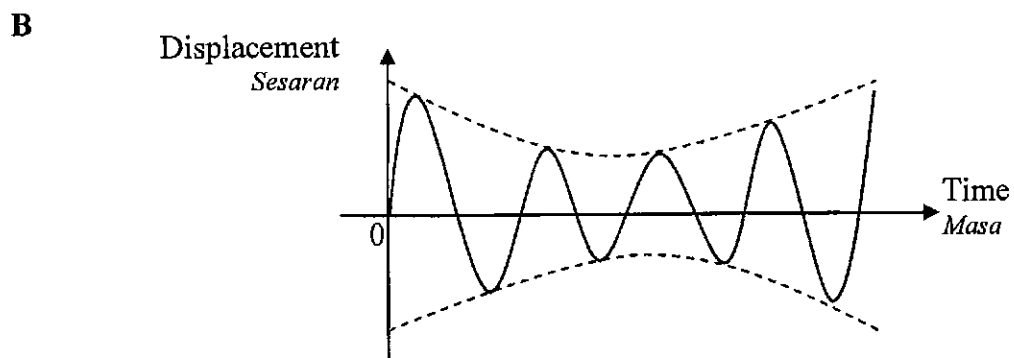
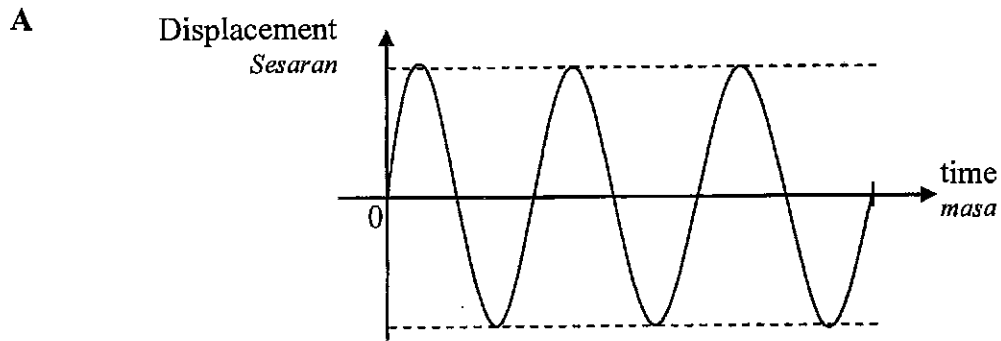
What is the focal length of the convex lens?

Apakah nilai panjang fokus kanta cembung tersebut?

- A 4.0 cm
- B 8.0 cm
- C 30.0 cm
- D 50.0 cm

26 Which displacement–time graph shows the damping process of an oscillating system?

Graf sesaran-masa manakah menunjukkan proses pelembapan bagi suatu sistem ayunan?



- 27 Diagram 20 shows water waves moving towards a plane reflector.
Rajah 20 di bawah menunjukkan gelombang air merambat ke arah pemantul satah.

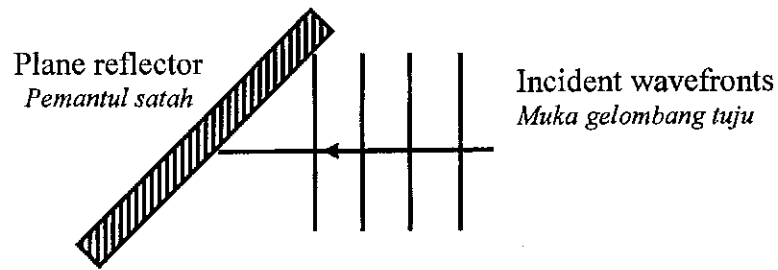


Diagram 20
Rajah 20

Which of the following physical quantities changes after reflection?
Kuantiti fizik manakah yang berubah selepas gelombang dipantulkan?

- A Velocity
Halaju
- B Frequency
Frekuensi
- C Wavelength
Panjang gelombang
- D Angle of reflection
Sudut pantulan

28 Diagram 21 shows water waves propagating from a deep to a shallow area.

Rajah 21 menunjukkan gelombang air yang merambat dari kawasan dalam ke cetek

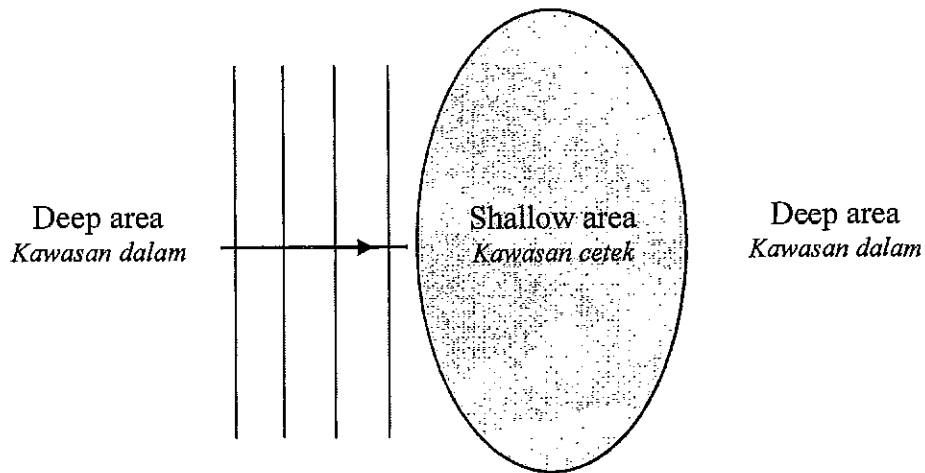


Diagram 21
Rajah 21

What happens to the wave frequency when the waves propagate in the shallow area?

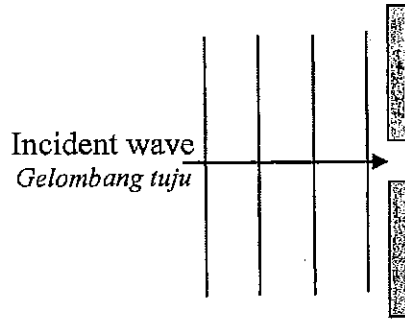
Apakah yang berlaku kepada frekuensi gelombang apabila gelombang merambat pada kawasan yang cetek?

- A Increases
Bertambah
- B Decreases
Berkurang
- C No change
Tidak berubah

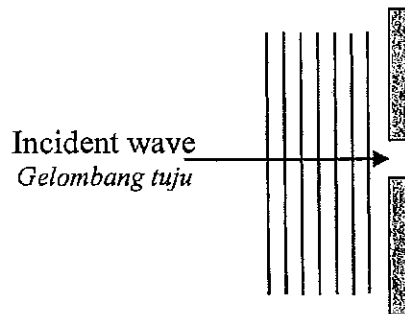
29 In which of the following situations will diffraction be more obvious?

Di antara berikut dalam situasi yang manakah menunjukkan pembelauan yang lebih jelas

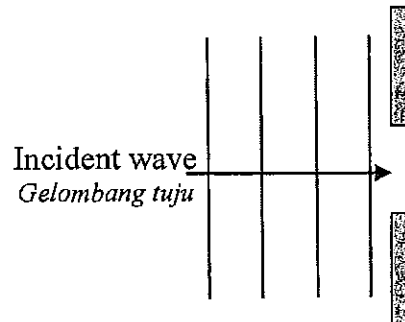
A



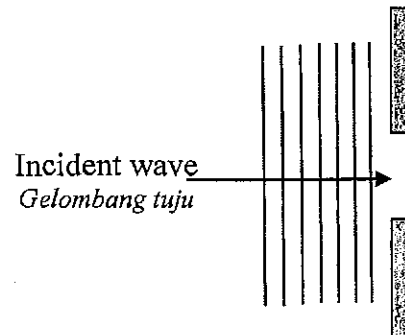
B



C



D



30 Diagram 22 shows an interference pattern observed in Young's Double Slit experiment using a green light source.

Rajah 22 menunjukkan satu corak interferens yang diperhatikan dalam eksperimen dwicelah Young menggunakan cahaya hijau

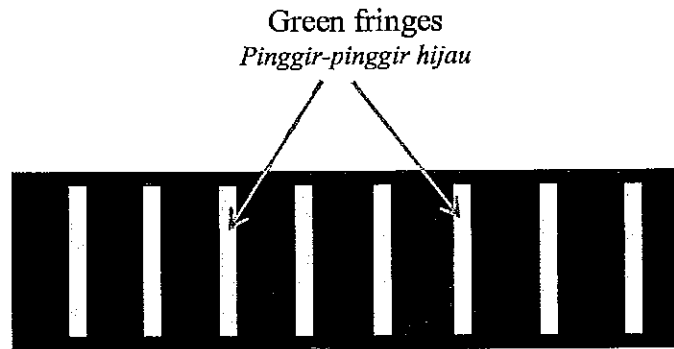


Diagram 22
Rajah 22

The distance between two consecutive fringes increases when

Jarak di antara dua pinggir berturutan akan bertambah apabila

- A green light is replaced with blue light
cahaya hijau diganti dengan cahaya biru
- B green light is replaced with yellow light
cahaya hijau diganti dengan cahaya kuning
- C the distance between the double slits is increased
jarak antara dwi celah bertambah
- D the distance between the double slits and the screen is decreased
jarak antara dwicelah dan skrin berkurang

M
J
K
A
B
T
L

$$\frac{ax}{bl} = x$$

$$a = \frac{klD}{x}$$

31 Diagram 23 shows the side view of two different double-glazed windows.

Rajah 23 menunjukkan pandangan sisi dua tingkap dwi lapisan yang berbeza.

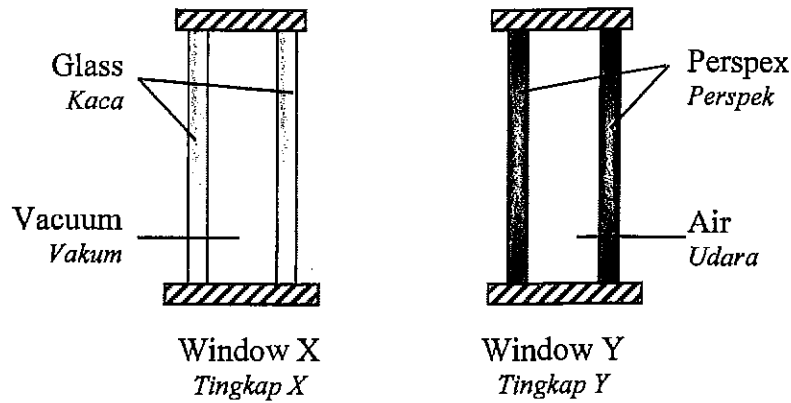


Diagram 23
 Rajah 23

Which window provides better sound proofing and why?

Tingkap manakah memberikan kesan kalis bunyi yang lebih baik dan mengapa?

	Window Tingkap	Reason Sebab
A	Y	Sound cannot travel through plastic Bunyi tidak boleh bergerak melalui plastik
B	X	Sound cannot travel through glass Bunyi tidak boleh bergerak melalui kaca
C	Y	Sound cannot travel through air Bunyi tidak boleh bergerak melalui udara
D	X	Sound cannot travel through vacuum Bunyi tidak boleh bergerak melalui vakum

32 Red and violet light are part of the visible light spectrum.

Cahaya merah dan ungu merupakan sebahagian daripada spektrum cahaya nampak.

Which of the following statements is correct about red and violet light?

Manakah antara pernyataan-pernyataan berikut adalah betul mengenai cahaya merah dan ungu?

- A The frequency of both light are the same.
Frekuensi kedua-dua cahaya adalah sama
- B The wavelength of both light are same. \rightarrow
Panjang gelombang kedua-dua cahaya adalah sama
- C The frequency of red light is higher than the frequency of violet light
Frekuensi cahaya merah lebih tinggi daripada frekuensi cahaya ungu
- D The wavelength of red light is longer than the wavelength of violet light
Panjang gelombang cahaya merah lebih panjang daripada panjang gelombang cahaya ungu

33 Diagram 24 shows the electric field lines for a pair of charged particles, q_1 and q_2 .

Rajah 24 menunjukkan garis medan elektrik bagi sepasang zarah bercas, q_1 dan q_2 .

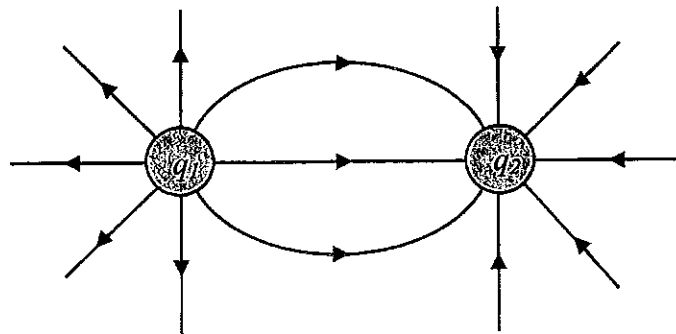


Diagram 24

Rajah 24

What are the charges of q_1 and q_2 ?

Apakah cas-cas bagi q_1 dan q_2 ?

	q_1	q_2
A	Positive <i>Positif</i>	Negative <i>Negatif</i>
B	Positive <i>Positif</i>	Positive <i>Positif</i>
C	Negative <i>Negatif</i>	Positive <i>Positif</i>
D	Negative <i>Negatif</i>	Negative <i>Negatif</i>

34 Diagram 25 shows a constantan wire connected across P and Q in a circuit.

Rajah 25 menunjukkan wayar konstantan disambung merentasi P dan Q dalam litar

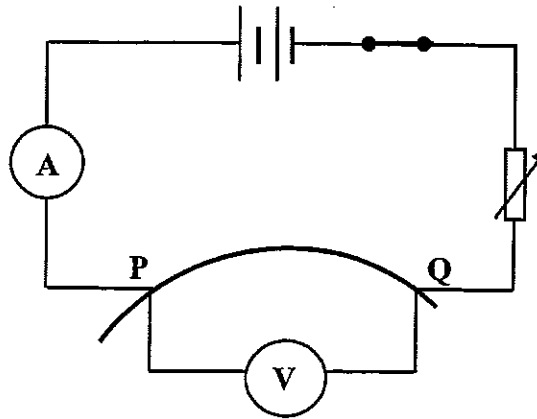


Diagram 25

Rajah 25

If the constantan wire is replaced with a thicker constantan wire, the reading of ammeter will

Jika wayar konstantan digantikan dengan wayar konstantan yang lebih tebal, bacaan ammeter akan

- A decrease
berkurang
- B increase
bertambah
- C remain unchanged
tidak berubah

- 35 Diagram 26.1 shows a circuit containing 2 resistors connected in series. Diagram 26.2 shows a circuit containing 2 resistors connected in parallel. All the resistors are identical.

Rajah 26.1 menunjukkan suatu litar mengandungi 2 perintang disambung secara sesiri. Rajah 26.2 menunjukkan suatu litar mengandungi 2 perintang disambung secara selari. Semua perintang adalah serupa.

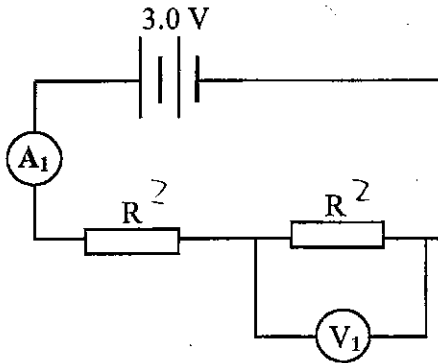


Diagram 26.1
Rajah 26.1

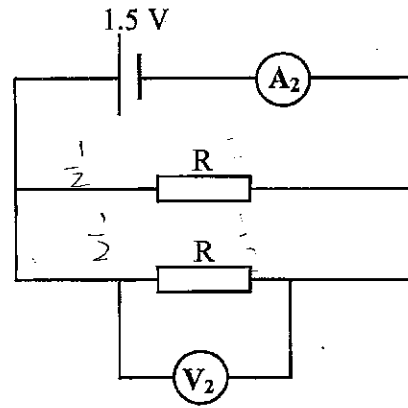


Diagram 26.2
Rajah 26.2

Which comparison about the readings of A_1 , A_2 , V_1 and V_2 is correct?

Perbandingan manakah tentang bacaan A_1 , A_2 , V_1 dan V_2 adalah betul?

	A_1 Reading Compared to A_2 Reading <i>Bacaan A_1 berbanding Bacaan A_2</i>	V_1 Reading Compared to V_2 Reading <i>Bacaan V_1 berbanding Bacaan V_2</i>
A	$A_1 > A_2$	$V_1 < V_2$
B	$A_1 = A_2$	$V_1 > V_2$
C	$A_1 < A_2$	$V_1 = V_2$
D	$A_1 = A_2$	$V_1 = V_2$

36 Diagrams 27.1 and 27.2 show a circuit before and after the switch is closed.

Rajah 27.1 dan 27.2 menunjukkan sebuah litar sebelum dan selepas suis di tutup

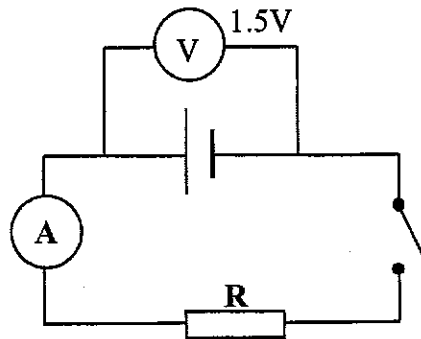


Diagram 27.1
Rajah 27.1

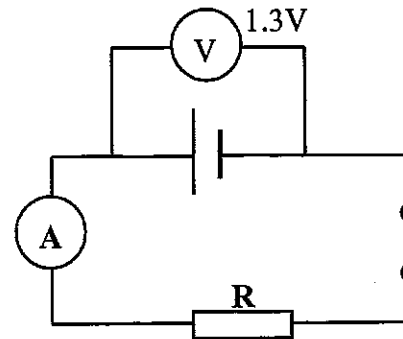


Diagram 27.2
Rajah 27.2

Why is there a drop in the voltmeter reading when the switch is closed?

Mengapakah terdapat penurunan pada bacaan voltmeter bila suis ditutup?

- A Energy is used to move charges in the circuit
Tenaga diperlukan untuk menggerakkan cas-cas di dalam litar
- B Energy is used to accumulate charges in the cell
Tenaga diperlukan untuk mengumpulkan cas-cas di dalam sel
- C Energy is used to overcome resistance of the cell
Tenaga digunakan untuk mengatasi rintangan sel
- D Energy is used to overcome the external resistance of the circuit
Tenaga digunakan untuk mengatasi rintangan luar litar

37 Diagram 28 shows a rice cooker labelled 240V, 700W.

Rajah 28 menunjukkan sebuah periuk nasi berlabel 240V, 700W.

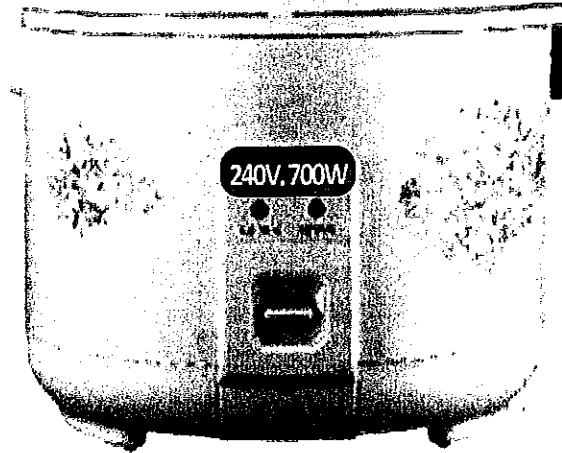


Diagram 28
Rajah 28

The label means the rice cooker will consume

Label 240V, 700W bermaksud periuk nasi akan menggunakan

- A 240 J of electrical energy if it is connected to a 700 V power supply
240 J tenaga elektrik jika disambung kepada 700 V bekalan kuasa
- B 700 J of electrical energy if it is connected to a 240 V power supply
700 J tenaga elektrik jika disambung kepada 240 V bekalan kuasa
- C 240 J of electrical energy every second if it is connected to a 700 V power supply
240 J tenaga elektrik setiap saat jika disambung kepada 700 V bekalan kuasa
- D 700 J of electrical energy every second if it is connected to a 240 V power supply
700 J tenaga elektrik setiap saat jika disambung kepada 240V bekalan kuasa

- 38 Diagram 29 shows current flows through two identical solenoids.
Rajah 29 menunjukkan arus mengalir melalui dua solenoid yang serupa.

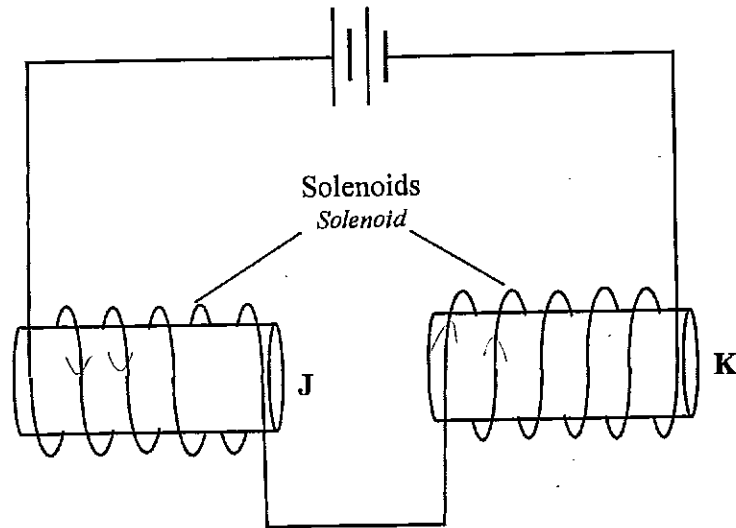


Diagram 29
Rajah 29

Which of the following is **correct** about the polarity of the magnetic poles produced at the ends **J** and **K** ?

*Antara berikut manakah betul tentang kekutuban magnet yang dihasilkan pada hujung **J** and **K**?*

	J	K
A	North <i>utara</i>	North <i>utara</i>
B	North <i>utara</i>	South <i>selatan</i>
C	South <i>selatan</i>	South <i>selatan</i>
D	South <i>selatan</i>	North <i>utara</i>

39 Diagram 30 shows a current-carrying conductor placed between the poles of two magnet bars.

Rajah 30 menunjukkan satu konduktor yang mengalirkan arus diletakkan di antara kutub dua bar magnet.

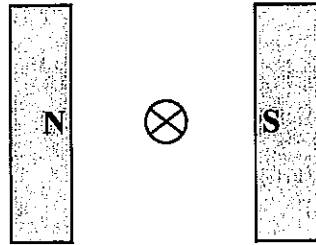
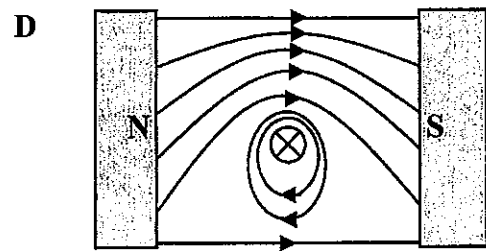
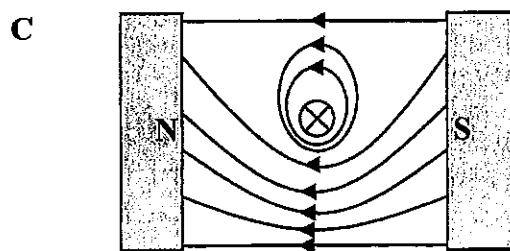
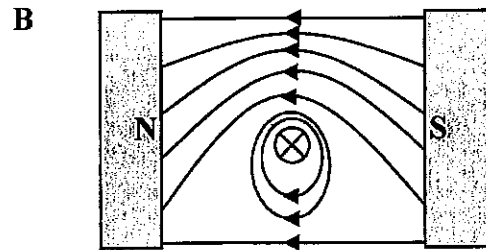
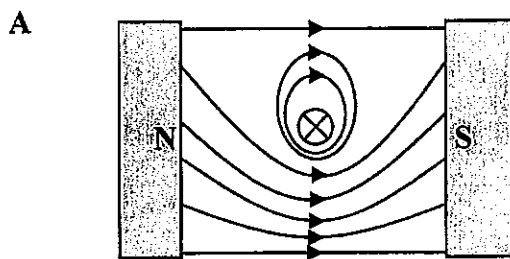


Diagram 30
Rajah 30

Which diagram shows the resulting magnetic field ?

Rajah yang manakah menunjukkan medan magnet yang dihasilkan?



- 40 Diagram 31 shows a dynamo that is used to provide electric current for a bicycle lamp.

Rajah 31 menunjukkan dinamo yang membekalkan arus elektrik bagi lampu sebuah basikal.

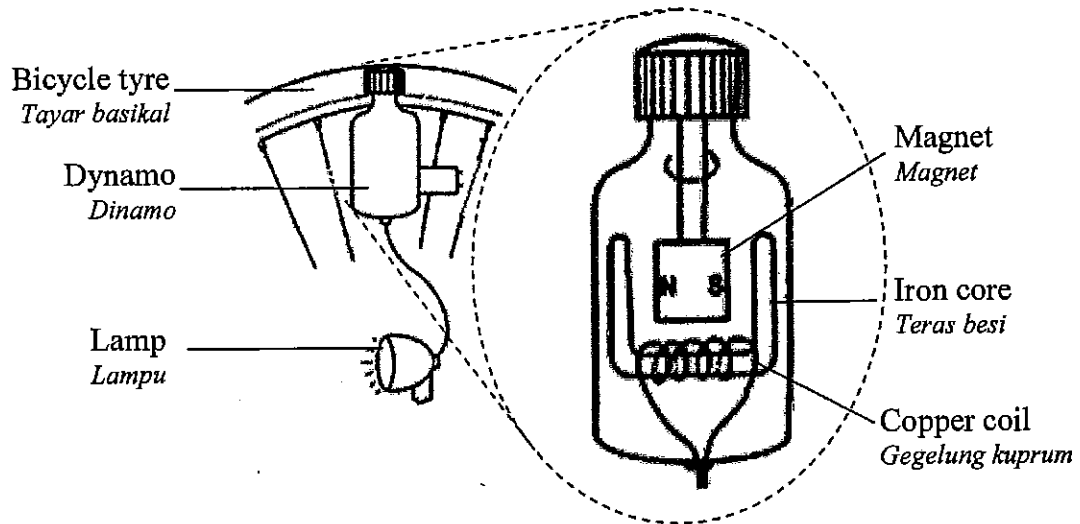


Diagram 31

Rajah 31

Which of these actions will increase the brightness of the lamp?

Antara berikut, tindakan yang manakah akan menambahkan kecerahan lampu?

- A Use thicker copper wire for the coil
Menggunakan wayar kuprum yang lebih tebal
- B Reverse the polarity of the magnet
Menyongsangkan kekutuban magnet
- C Decrease the number of turns in the copper coil
Mengurangkan bilangan lilitan gegelung wayar kuprum
- D Increase the distance between magnet and copper coil
Menambah jarak di antara magnet dan gegelung kuprum

41 Diagram 32 shows an ideal transformer.

Rajah 32 menunjukkan sebuah transformer unggul.

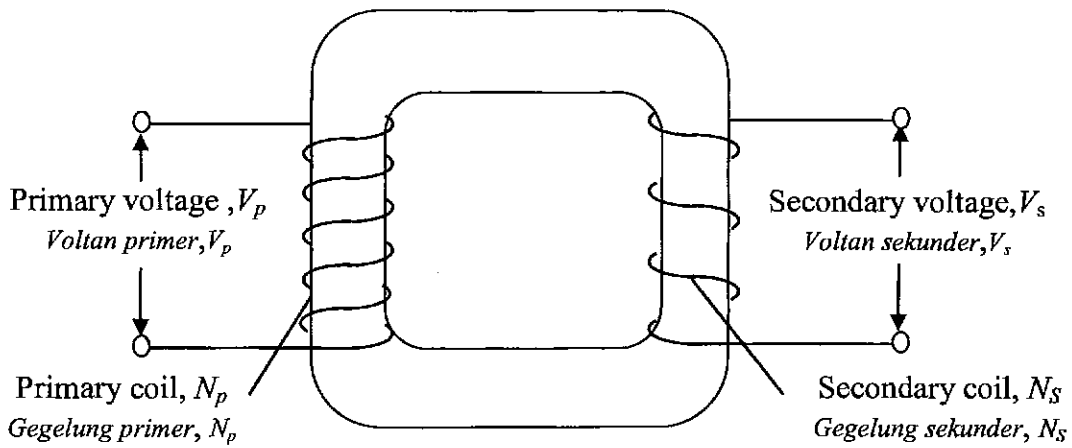
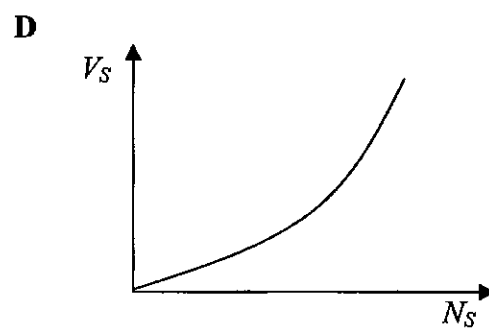
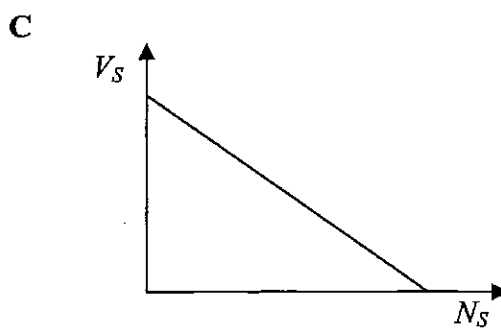
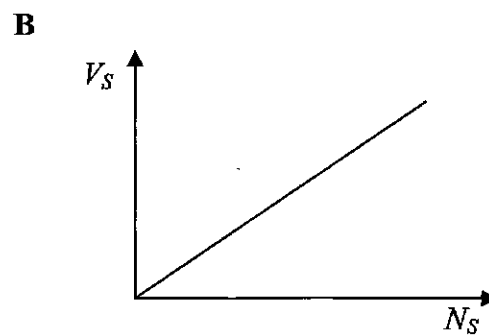
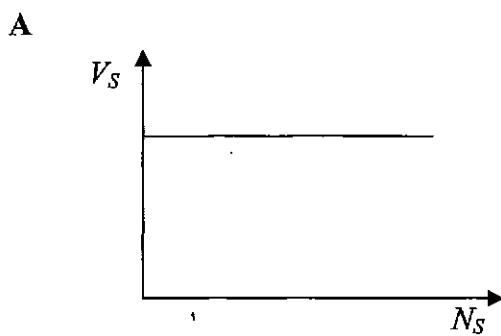


Diagram 32
Rajah 32

Which of the following graphs shows the correct relationship between V_s and N_s ?

Antara graf berikut, yang manakah menunjukkan hubungan antara V_s dengan N_s yang betul?



42 Diagram 33 shows a system for the transmission of electric power.

Rajah 33 menunjukkan sebuah sistem penghantaran kuasa elektrik .

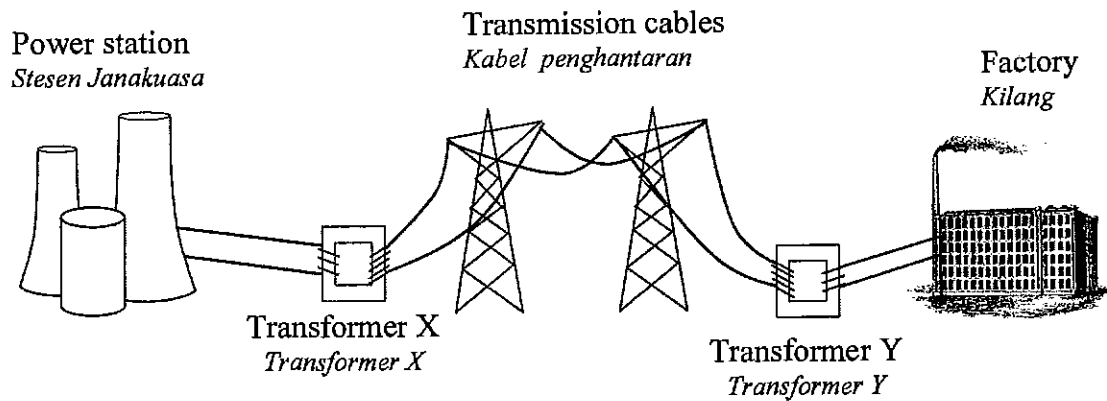


Diagram 33

Rajah 33

What is the purpose of increasing the voltage of the power supply by transformer X?

Apakah tujuan menaikkan voltan kuasa elektrik oleh transformer X?

- A To reduce the resistance of the transmission cables
Untuk mengurangkan rintangan kabel-kabel penghantaran
- B To reduce power loss during transmission
Untuk mengurangkan kehilangan kuasa semasa penghantaran
- C To increase the power transferred along the cable
Untuk meningkatkan kuasa yang dipindahkan melalui kabel
- D To increase the electric current through the transmission cables
Untuk meningkatkan jumlah arus elektrik melalui kabel penghantaran

43 Diagram 34 shows a display on the screen of a cathode ray oscilloscope (C.R.O).

Rajah 34 menunjukkan paparan pada skrin osiloskop sinar katod (O.S.K).

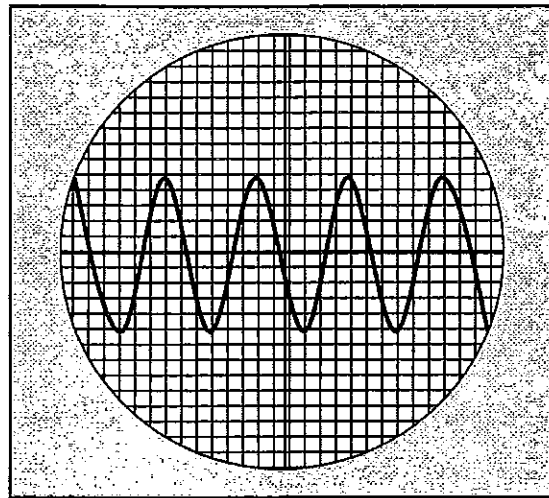


Diagram 34
Rajah 34

Which of the following is correct about the time base of the C.R.O and the input current?

Manakah diantara jawapan di bawah adalah betul tentang dasar masa dan jenis arus?

	Time base <i>Dasar masa</i>	Type of current <i>Jenis arus</i>
A	Off <i>Ditutup</i>	Alternating current <i>Arus ulang-alik</i>
B	Off <i>Ditutup</i>	Direct current <i>Arus terus</i>
C	On <i>Dihidupkan</i>	Alternating current <i>Arus ulang-alik</i>
D	On <i>Dihidupkan</i>	Direct current <i>Arus terus</i>

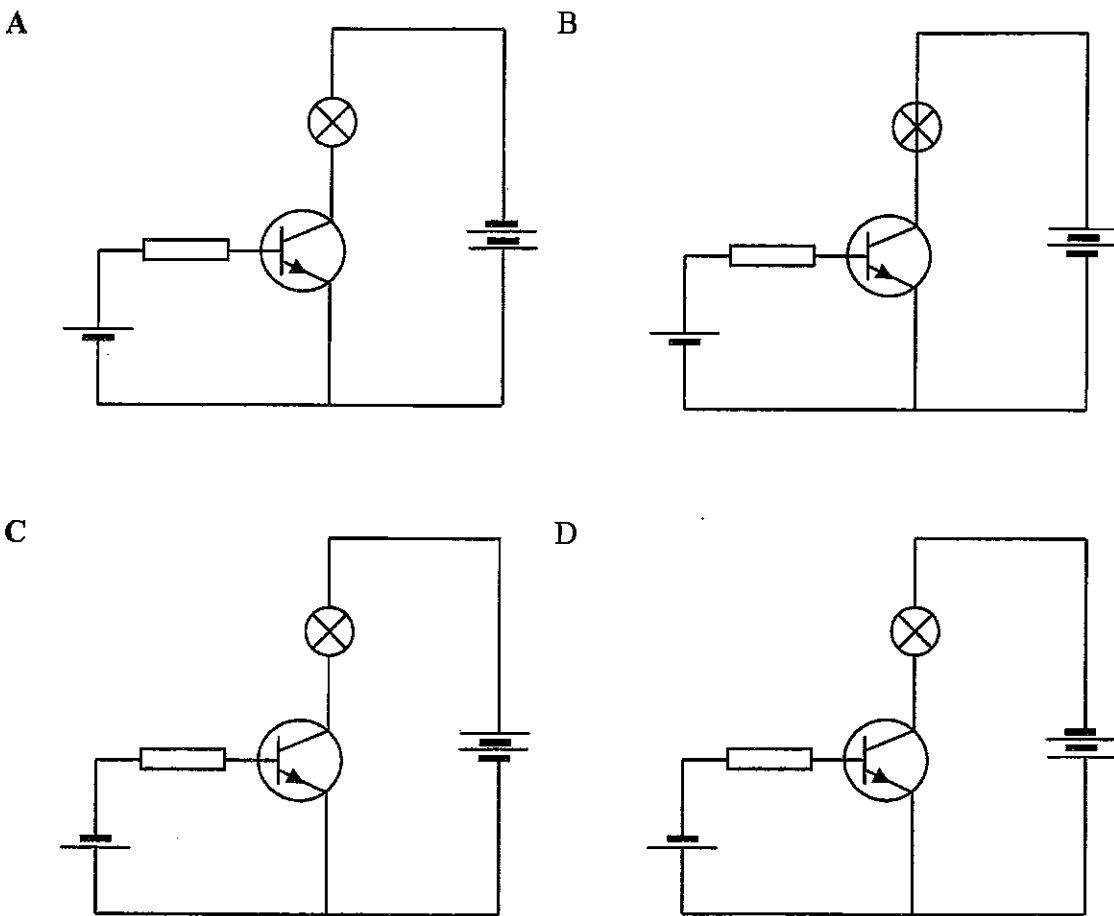
- 44 Which of the elements below can be doped to a semiconductor to produce an n-type semiconductor?

Manakah di antara elemen-elemen di bawah boleh di dopkan ke semikonduktor untuk menghasilkan semikonduktor jenis-n?

- A Boron
Boron
- B Indium
Indium
- C Gallium
Galium
- D Phosphorus
Fosforus

- 45 Which of the following circuits will light up the bulb?

Litar manakah akan menyalakan mentol?



- 46 Diagram 35 shows a logic gate circuit with two inputs, X and Y and output Z.
Rajah 35 menunjukkan litar get logik dengan dua input X dan Y dan output Z.

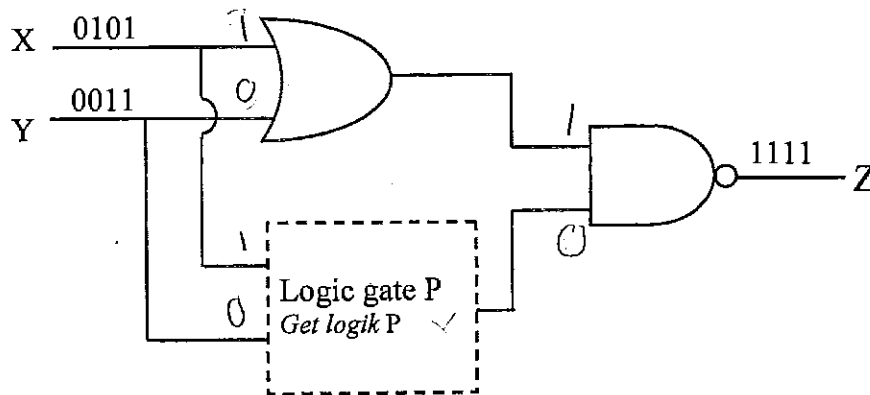


Diagram 35
Rajah 35

What is logic gate P ?

Apakah get logik P?

- A OR
ATAU
- B AND
DAN
- C NOR
TAK ATAU
- D NAND
TAK DAN

47 Table 36 shows the number of protons and neutrons for atoms W, X, Y and Z.

Jadual 36 menunjukkan bilangan proton dan neutron bagi atom-atom W, X, Y dan Z.

Atom	Number of protons <i>Bilangan proton</i>	Number of neutrons <i>Bilangan neutron</i>
W	80	125
X	82	124
Y	83	125
Z	82	126

Table 36

Jadual 36

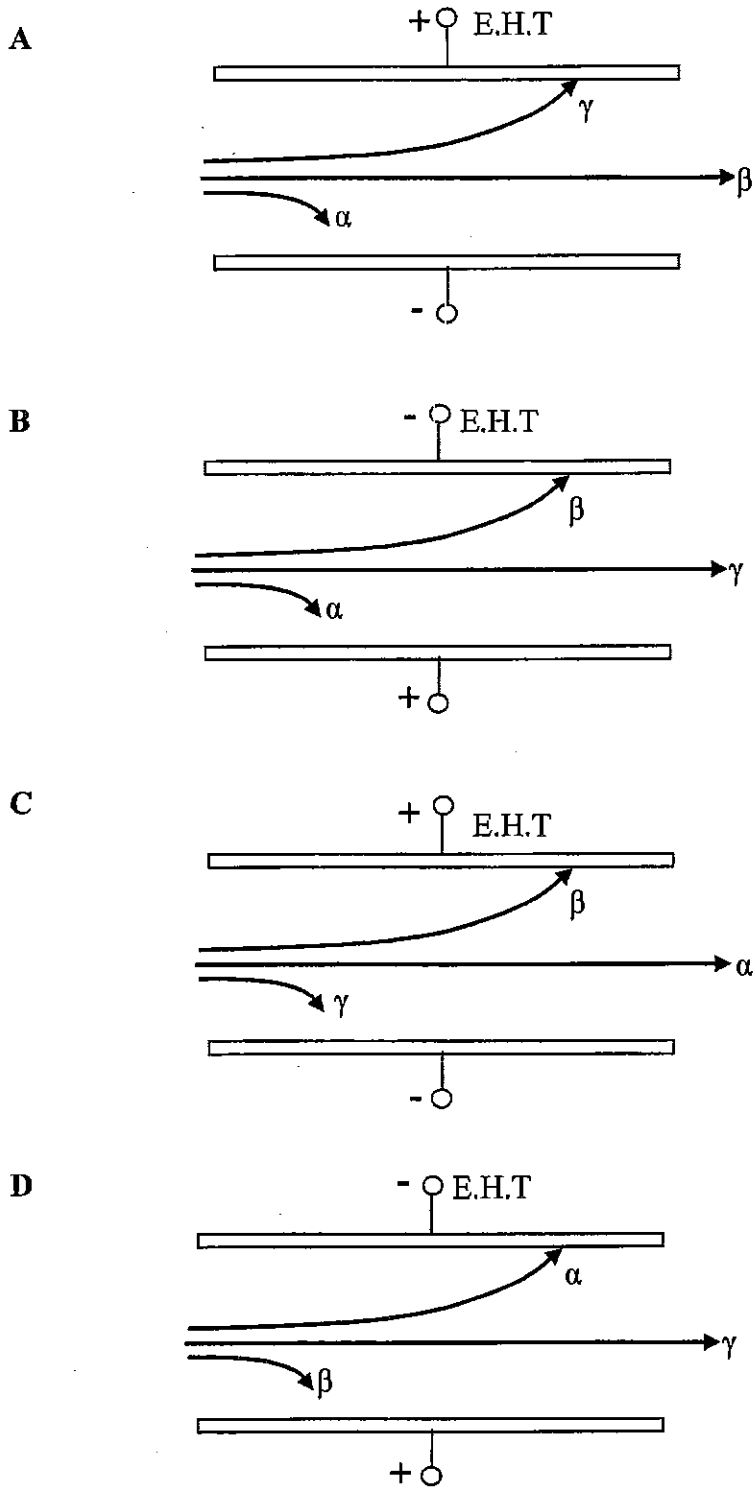
Which of the following pairs are isotopes of an element?

Antara pasangan-pasangan berikut yang manakah merupakan isotop suatu unsur?

- A X and Z
X dan Z
- B Y and Z
Y dan Z
- C W and X
W dan X
- D W and Y
W dan Y

48 Which of the following diagrams shows the correct deflection of radioactive rays in a uniform electric field?

Rajah manakah antara berikut yang menunjukkan pemesongan yang betul bagi sinar radioaktif dalam medan elektrik seragam?



49 Diagram 37 shows the circuit in a smoke detector.

Rajah 37 menunjukkan litar di dalam satu alat pengesan asap.

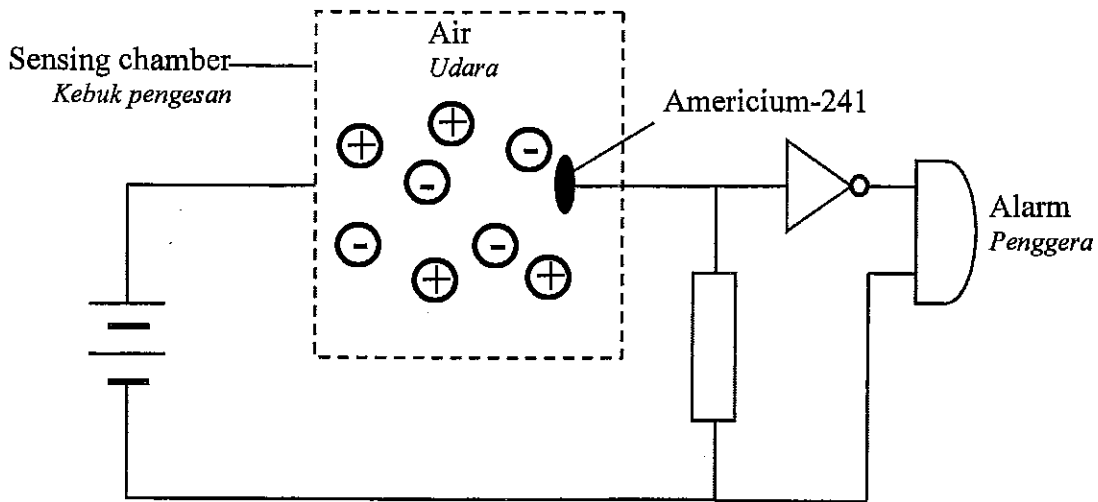


Diagram 37
Rajah 37

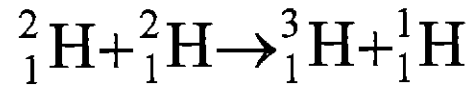
Which of the following occurs in the smoke detector?

Manakah antara berikut berlaku di dalam pengesan asap tersebut?

- A Gamma rays from radioactive decay of Americium-241 ionize air molecules in the sensing chamber
Sinar gamma dari reputan radioaktif Americium-24 mengion molekul-molekul udara dalam kebuk pengesan
- B Ion flow towards the electrodes form a small current
Pergerakan ion-ion ke arah elektrod menghasilkan arus kecil
- C Smoke particles attach to air molecules and increases the current
Zarah-zarah asap melekat kepada molekul udara menyebabkan arus bertambah
- D NOT gate detects current increase and sounds the alarm
Get TAK mengesan arus elektrik dan membunyikan siren kecemasan

50 A nuclear fusion reaction is represented by the following equation.

Satu tindakbalas pelakuran nukleus diwakili oleh persamaan di bawah.



What is the mass defect produced in the above reaction?

Apakah cacat jisim yang dihasilkan dalam tindakbalas di atas?

$$[{}^2_1\text{H} = 2.014102u, \quad {}^3_1\text{H} = 3.016049u, \quad {}^1_1\text{H} = 1.007825u, \quad 1u = 1.66 \times 10^{-27} \text{ kg}]$$

- A $4.85 \times 10^{27} \text{ kg}$
- B $2.61 \times 10^{24} \text{ kg}$
- C $1.34 \times 10^{-26} \text{ kg}$
- D $7.19 \times 10^{-30} \text{ kg}$

END OF QUESTION PAPER