NAMA : .....

TINGKATAN : .....

LOGO SEKOLAH

NAMA SEKOLAH
ALAMAT SEKOLAH

PEPERIKSAAN PERCUBAAN SPM 2021

FIZIK
Kertas 1
Nov 2021
1 ¼ jam

4531/1

Satu jam lima belas minit

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa*

MAKLUMAT UNTUK CALON
INFORMATION FOR CANDIDATES

1. Kertas soalan ini mengandungi 40 soalan.
   This question paper consists of 40 questions.
2. Jawab **semua** soalan.
   *Answer **all** questions.*
3. Jawab setiap soalan dengan menghitamkan ruangan yang betul pada kertas jawapan.
   Answer each question by blackening the correct space on the answer sheet.
4. Hitamkan **satu** ruangan sahaja bagi setiap soalan.
   *Blacken only **one** space for each question.*
5. Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
   If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.
6. Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.
   The diagram in the question provided are not drawn to scale unless stated.
7. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.
   You may use a non-programmable scientific calculator.
8. Satu senarai rumus disediakan di halaman 2.
   A list of formulae is provided in page 2.

Kertas peperiksaan ini mengandungi 30 halaman bercetak

[Lihat halaman sebelah

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

1. $a = \dfrac{v-u}{t}$

2. $v^2 = u^2 + 2as$

3. $s = ut + \dfrac{1}{2}at^2$

4. Momentum = mv

5.. $F = ma$

6. Tenaga kinetik / *Kinetic Energy* $= \frac{1}{2}mv^2$

7. Tenaga keupayaan graviti /
Gravitational potential energy = mgh

8. Tenaga keupayaan elastik /
Elastic potential energy = $\frac{1}{2}Fx$

9. Kuasa /*Power*, $P = \frac{Tenaga}{Masa}$

10. $\rho = \dfrac{m}{V}$

11. Kuasa /*Power*, $P = IV$

12. Tekanan cecair/ *Pressure*, $P = h\rho g$

13. Tekanan/ *Pressure* , $P = \dfrac{F}{A}$

14. Haba / *Heat*, $Q = mc\Delta\theta$

15. $\dfrac{PV}{T}$ = *constant*

16. $n = \dfrac{\sin i}{\sin r}$

17. $n = \dfrac{real\,depth}{appreant\,depth}$

18. $\dfrac{1}{f} = \dfrac{1}{u} + \dfrac{1}{v}$

19. *Linear magnification*, $m = \frac{v}{u}$

20. $\lambda = \dfrac{ax}{D}$

21. $v = f\lambda$

22. $V = IR$

23. $Q = It$

24. Daya graviti / *Gravitational force*, $F = \dfrac{Gm_1m_2}{r^2}$

25. Pecutan graviti /
Gravitational acceleration, $g = \dfrac{GM}{r^2}$

26. Daya memusat / *Centripetal force*, $F = \dfrac{mv^2}{r}$

27. Pecutan memusat /
Centripetal acceleration, $a = \dfrac{v^2}{r}$

28. Tenaga keupayaan graviti /
Gravitational potential energy, $U = -\dfrac{Gm_1m_2}{r}$

29. Laju linear / *Linear speed*, $v = \sqrt{\frac{GM}{r}}$

30. Laju linear / *Linear speed*, $v = \dfrac{2\pi r}{T}$

31. Halaju lepas/ *Escape velocity*, $v = \sqrt{\frac{2GM}{r}}$

32. Tempoh orbit/ *Orbital period*, $T^2 = \dfrac{4\pi^2 r^3}{GM}$

33. $\dfrac{T_1^2}{T_2^2} = \dfrac{r_1^3}{r_2^3}$

34. $g = 9.81\ m\,s^{-2}$

35. Jisim Bumi / *Mass of Earth*, $M = 5.97\times10^{24}\,kg$

36. Jejari Bumi / *Radius of Earth*, $R = 6.37\times10^{6}\,m$

37. Pemalar graviti / *Gravitational constant*
$G = 6.67\times10^{-11}\,Nm^2kg^{-2}$

38. Jisim matahari/ *Mass of the sun* = $1.99\times10^{30}\,kg$

39. $E = mc^2$

40. $c = 3.0\times10^{8}\ m\,s^{-1}$

[Lihat halaman sebelah

Jawab **semua** soalan
*Answer **all** the question*

1 Kuantiti manakah adalah kuantiti vektor?
Which quantity is a vector quantity?

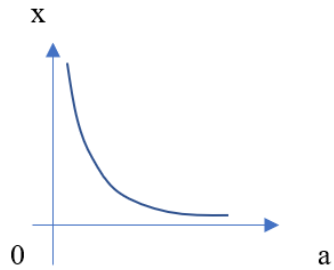
A Jisim
Mass

B Tenaga
Energy

C Tekanan
Pressure

D Momentum
Momentum

2 Rajah 1 menunjukkan graf x melawan a.
Diagram 1 *shows the graph of x against a.*



Rajah 1
Diagram 1

Apakah hubungan antara x dan a?
What is the relationship between x and a?

A x berkadar secara songsang kepada a.
x is inversely proportional to a.

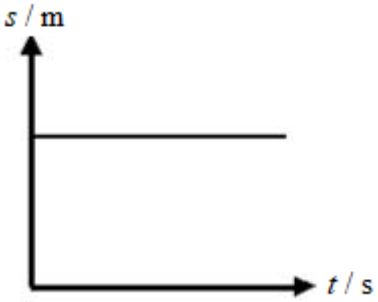
B x berkurang secara linear kepada a.
x decreases linearly to a.

C x berkurang secara linear kepada $\frac{1}{a}$.
x decreases linearly to $\frac{1}{a}$.

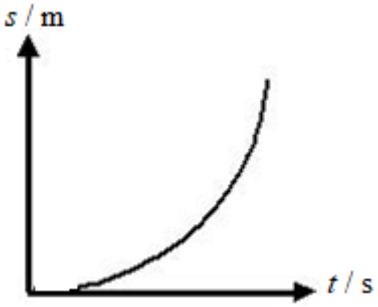
D x berkadar secara langsung kepada $\frac{1}{a}$.
x is directly proportional to $\frac{1}{a}$.

3 Antara graf berikut, yang manakah menunjukkan halaju malar?
Which graph shows a constant velocity?

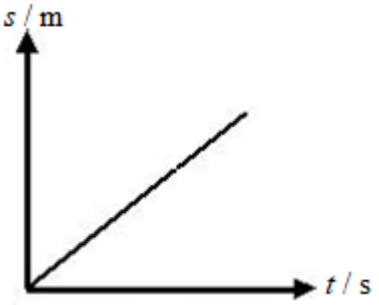
A



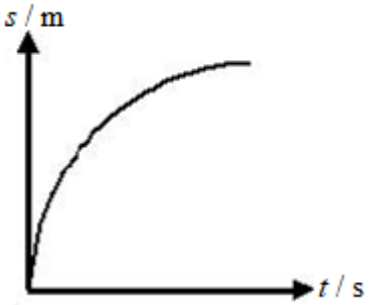
B



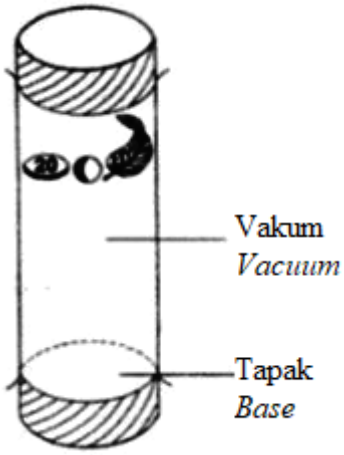
C



D



4 Rajah 2 menunjukkan duit syiling, guli dan daun kering dijatuhkan serentak di dalam silinder vakum.
Diagram 2 *shows a coin, marble and dried leaf being released at the same time in a vacuum cylinder.*



Rajah 2
Diagram 2

Manakah pemerhatian yang **betul**?
Which observation is ***correct****?*

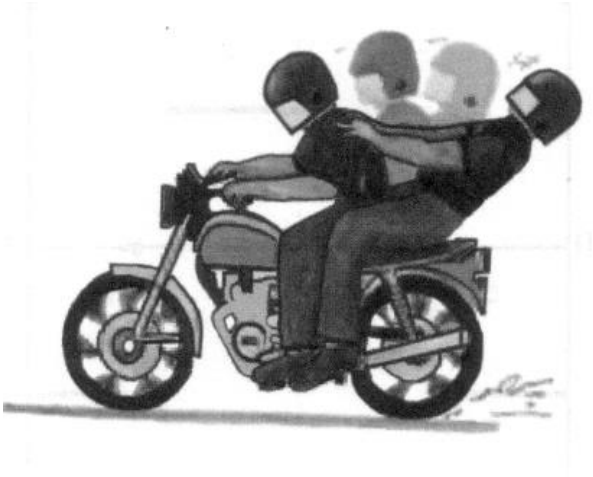
A Ketiga-tiga objek terapung di dalam silinder
All three objects float in the cylinder

B Ketiga-tiga objek tiba di tapak pada masa yang sama.
All three objects reach the base at the same time

C Guli tiba di tapak lebih awal daripada duit syiling
The marble reaches the base earlier than the coin

D Duit syiling dan guli tiba di tapak lebih awal daripada daun kering.
The coin and the marble reach the base earlier than the dried leaf

5 Rajah 3 menunjukkan keadaan pembonceng motosikal yang bergerak ke belakang apabila motosikal mula memecut.
Diagram 3 *shows a pillion rider moving backwards when the motorcycle accelerates.*



Rajah 3
Diagram 3

Pergerakan pembonceng itu ke belakang boleh diterangkan oleh
The backwards movement of the pillion rider can be explained by

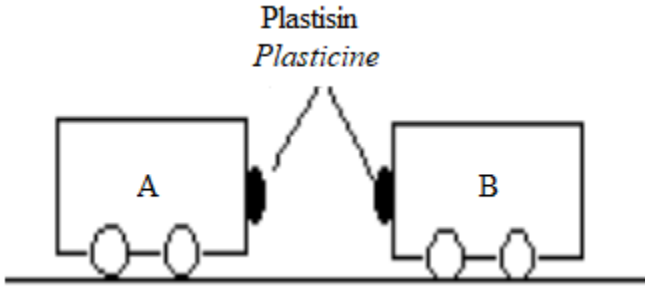
A konsep inersia
the concept of inertia

B konsep keseimbangan daya
the concept of equilibrium of forces

C prinsip keabadian momentum
principle of conservation of momentum

D prinsip keabadian tenaga
principle of conservation of energy

6 Rajah 4 menunjukkan troli A dan troli B menghampiri antara satu sama lain dan berlanggar.
Diagram 4 *shows a trolley A and trolley B are approaching each other and collide.*



Rajah 4
Diagram 4

Manakah penyataan yang **betul**?
Which statement is ***true****?*

A Perlanggaran kenyal berlaku.
Elastic collision occurs

B Jumlah momentum diabadikan
Total momentum is conserved

C Jumlah tenaga kinetik diabadikan
Total kinetic energy is conserved

D Kedua-dua objek bergerak dengan kelajuan berbeza selepas berlanggar.
Both objects will move with different velocity after collision.

7 Rajah 5 menunjukkan seorang atlet membengkokkan kakinya ketika mendarat dalam acara lompat jauh.
Diagram 5 *shows an athlete bending his legs upon lending in a long jump event.*

Rajah 5
Diagram 5

Atlet itu membengkokkan kakinya untuk mengurangkan …
The athlete bent his legs to reduce the…

A impuls ke atas kakinya
impulse on his feet

B daya impuls ke atas kakinya
impulsive force on his feet

C halaju sejurus sebelum mendarat
velocity just before landing

D masa hentaman antara kakinya dengan pasir
time of impact between his feet and the sand

8 Antara berikut, yang manakah boleh diaplikasikan oleh Hukum Kegravitian Semesta?
Which of the following can be applied by the Universal Law of Gravitation?

A Planet di sekitar Matahari
The planets around the Sun

B Bumi dan Bulan
The Earth and the Moon

C Bumi dan epal
The Earth and the apple

D Sebarang pasangan jasad
Any pair of bodies

9 Hukum Kepler Ketiga menyatakan …
Kepler's Third Law states…

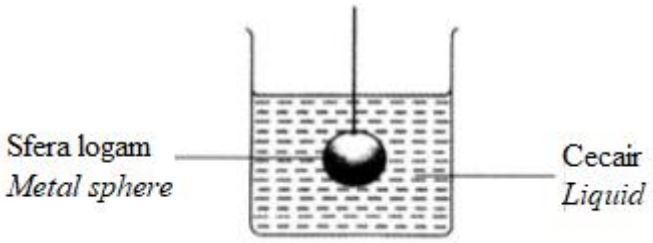
A orbit planet di sekeliling Matahari adalah elips, dengan matahari pada satu fokus
the orbit of a planet around the Sun is an ellipse, with the Sun at one focus

B kuasa dua tempoh orbit planet adalah berkadar terus dengan kuasa tiga jejari orbitnya
the square of the orbital period of a planet is directly proportional to the cube of the radius of its orbit.

C paksi semimajor adalah sama dengan jarak purata planet dari Matahari
the semimajor axis is equal to the planet's average distance from the Sun

D tiada jawapan yang betul
none of these answers is correct

10 Rajah 6 menunjukkan sfera logam pada suhu 90 ºC direndam ke dalam cecair pada suhu 40 ºC.
Diagram 6 *shows a metal sphere at temperature of* 90°*C immersed in a liquid at temperature of* 40°*C.*



Rajah 6
Diagram 6

Apakah suhu sfera logam itu apabila keseimbangan terma dicapai antara sfera logam dengan cecair itu?
What is the temperature of the metal sphere when thermal equilibrium is achieved between the metal sphere and the liquid?

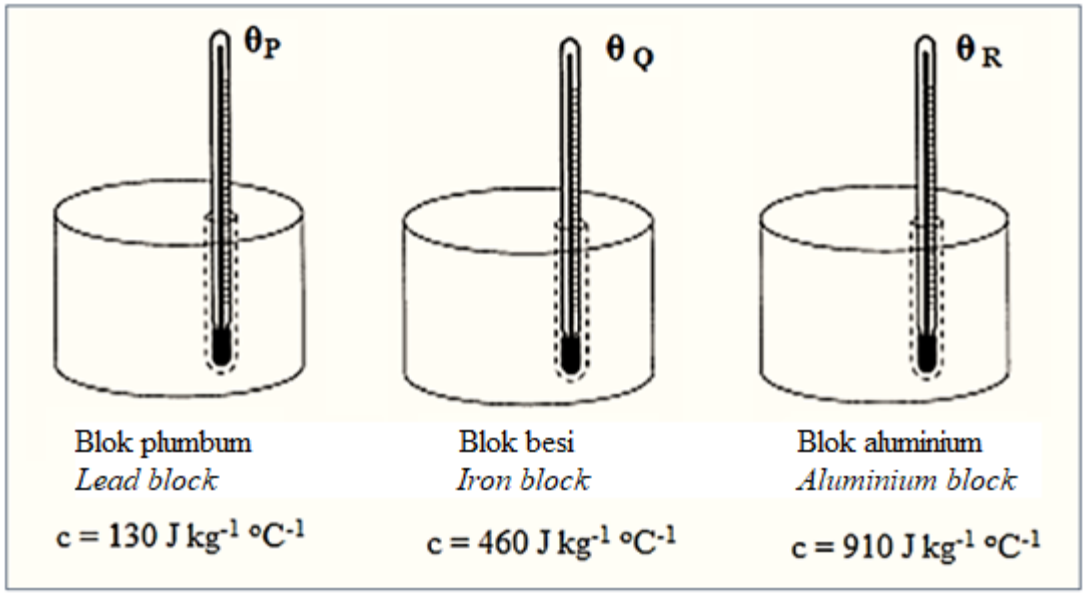
A Lebih daripada 90 ºC
More than 90 °C

B Sama dengan suhu bilik
Same as room temperature

C Kurang daripada 40 ºC
Less than 40 °C

D Antara 40 ºC dan 90 ºC
Between 40 °C and 90°C

11 Rajah 7 menunjukkan satu blok plumbum, satu blok besi dan satu blok aluminium. Semua blok itu mempunyai jisim dan suhu awal yang sama dan dibiarkan menyejuk. Ketiga-tiga logam itu mempunyai muatan haba tentu, c yang berbeza. Selepas 15 minit suhu ketiga-tiga logam itu direkodkan.
Diagram 7 shows a lead block, an iron block and aluminium block. All blocks have the same mass and initial temperature and let to be cold. All the blocks have different specific heat capacity, c. After 15 minutes the temperature of the blocks are recorded.



Rajah 7
Diagram 7

Perbandingan yang manakah betul tentang perubahan suhu bagi blok plumbum, θ_P, blok besi, θ_Q dan blok aluminium, θ_R?
Which comparison is correct about the change in temperature of lead block, θ_P, *iron block,* θ_Q, *and* aluminium block, θ_R?

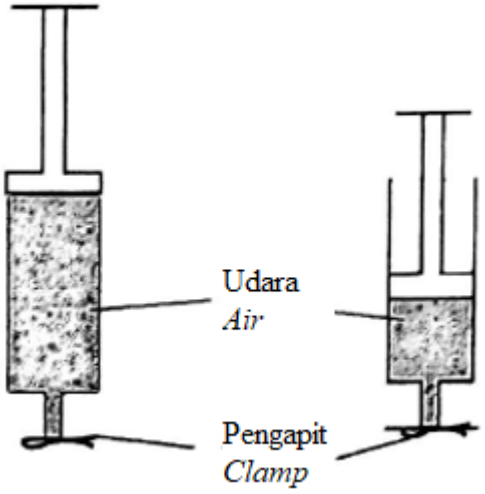
A $\theta_P > \theta_Q > \theta_R$

B $\theta_Q > \theta_P > \theta_R$

C $\theta_R > \theta_P > \theta_Q$

D $\theta_R > \theta_Q > \theta_P$

12 Rajah 8.1 menunjukkan sebuah picagari dengan udara terperangkap. Rajah 8.2 menunjukkan keadaan picagari itu apabila ombohnya ditekan ke bawah dengan perlahan.
Diagram 8.1 *shows a syringe with air trapped. Diagram* 8.2 *shows the syringe after the piston was pushed down slowly.*

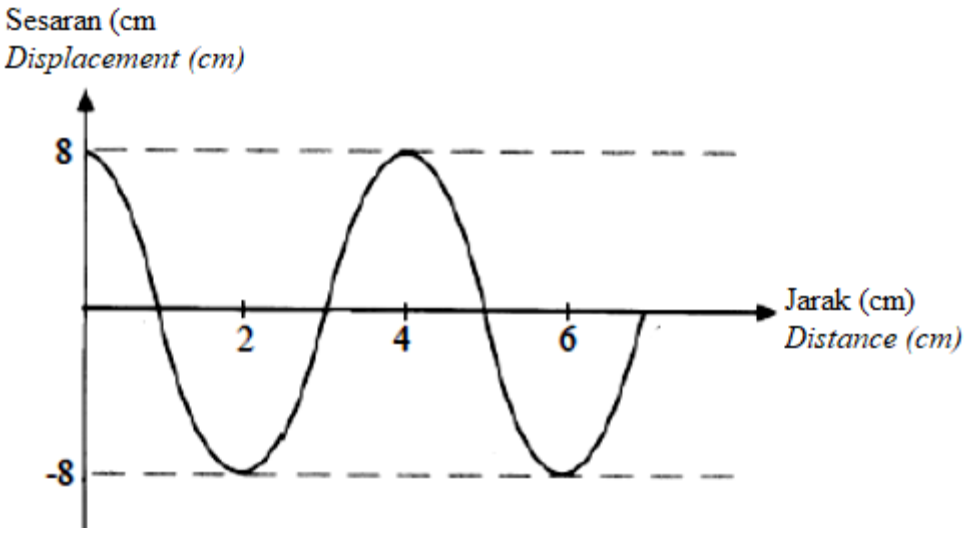


Rajah 8.1 Rajah 8.2
Diagram 8.1 *Diagram* 8.2

Antara yang berikut yang manakah betul mengenai situasi zarah-zarah udara dalam Rajah 8.1 dan Rajah 8.2?
Which comparison is correct between the situation of air particles in Diagram 8.1 *and Diagram* 8.2*?*

	Halaju pergerakan zarah *Velocity of particle*	Kadar perlanggaran zarah dengan dinding picagari *Rate of collision of particle with the syringe wall*
A	Bertambah *Increases*	Tidak berubah *No change*
B	Bertambah *Increases*	Berkurang *Decreases*
C	Berkurang *Decreases*	Bertambah *Increases*
D	Tidak berubah *No change*	Bertambah *Increases*

13 Rajah 9 menunjukkan graf sesaran-jarak bagi satu gelombang.
Diagram 9 *shows a displacement-distance graph of a wave.*

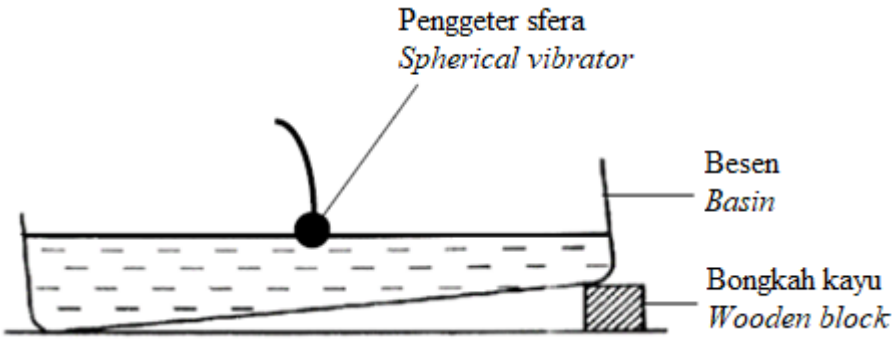


Rajah 9
Diagram 9

Berapakah panjang gelombang dan amplitud gelombang?
What is the wavelength and amplitude of the wave?

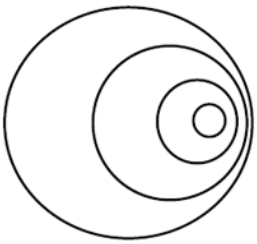
	Panjang gelombang *Wavelength*	Amplitud *Amplitude*
A	6 cm	8 cm
B	4 cm	8 cm
C	4 cm	16 cm
D	6 cm	16 cm

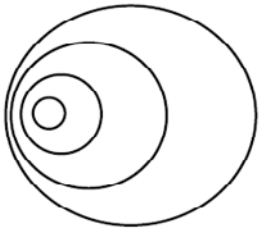
14 Rajah 10 menunjukkan sebuah besen condong yang berisi air. Satu penggetar sfera digunakan untuk menghasilkan gelombang.
Diagram 10 *shows a tilted basin containing water. A spherical vibrator is used to produce waves.*

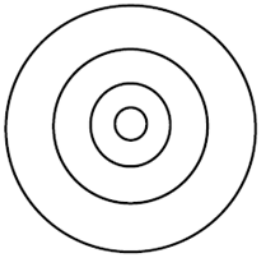


Rajah 10
Diagram 10

Corak gelombang manakah yang akan diperhatikan di dalam besen?
Which wave pattern will be observed in the basin?

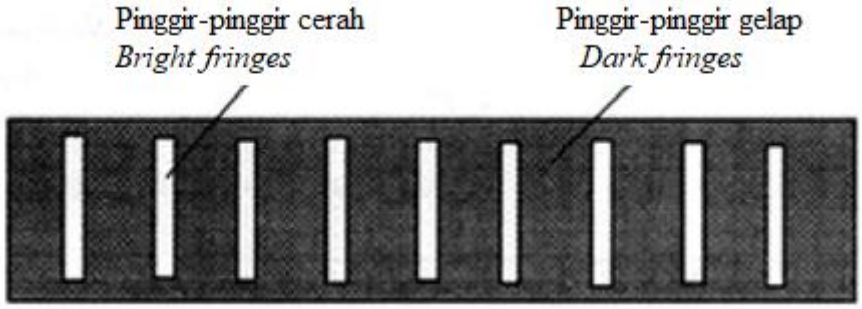
A 

B 

C 

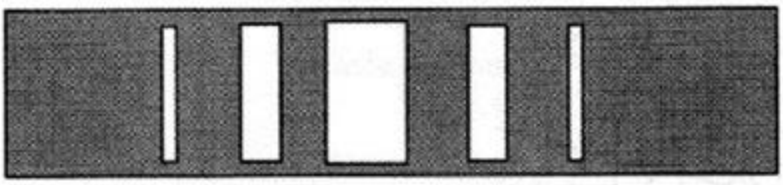
D 

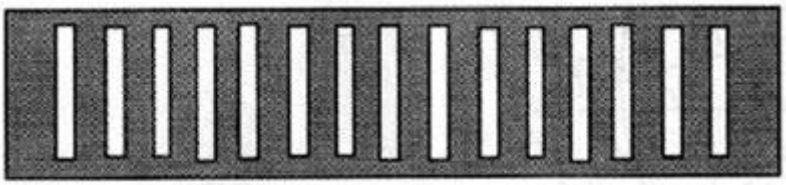
15 Rajah 11 menunjukkan pinggir-pinggir yang diperolehi apabila cahaya merah digunakan dalam eksperimen dwicelah Young.
Diagram 11 *shows the fringes obtained when red light is used in a Young's double slit experiment.*

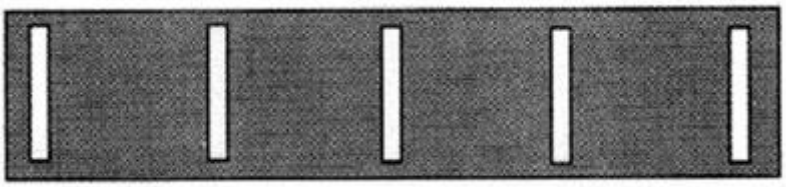


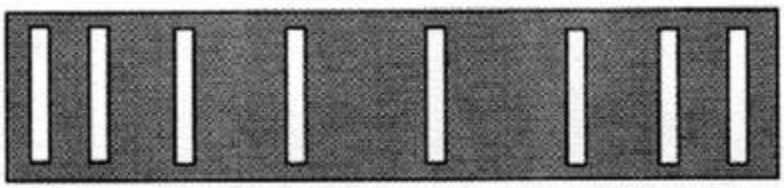
Rajah 11
Diagram 11

Pinggir-pinggir manakah yang diperhatikan jika cahaya merah digantikan dengan cahaya biru?
Which fringes are observed when the red light is replaced by blue light?

A


B


C


D


16 Rajah 12 menunjukkan satu senarai gelombang elektromagnet.
Diagram 12 *shows a list of electromagnetic waves.*

Gelombang elektromagnet *Electromagnetic wave*	
U	Sinar ultra ungu / *Ultraviolet wave*
V	Cahaya tampak / *Visible light*
M	Gelombang mikro / *Mikrowave*
X	Sinar-X / *X-ray*
R	Gelombang radio / *Radiowave*

Rajah 12
Diagram 12

Senarai yang manakah menunjukkan panjang gelombang disusun secara menaik?
Which of the following shows their wavelengths arranged in a ascending order?

A U, V, M, X, R

B R, M, V, U, X

C X, U, V, M, R

D X, V, U, M, R

17 Alat manakah yang menggunakan konsep pantulan dalam penuh?
Which instrument uses the concept of total internal reflection?

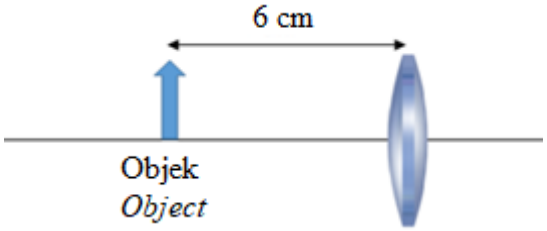
A Mikroskop
Mikroscope

B Binokular berprisma
Prism binocular

C Kanta pembesar
Magnifying glass

D Teleskop astronomi
Astronomical telescope

18 Rajah 13 menunjukkan satu objek diletakkan di hadapan sebuah kanta cembung dengan panjang fokus 10 cm.
Diagram 13 *shows an object is placed in front of a convex lens with focal length of 10 cm.*



Rajah 13
Diagram 13

Apakah ciri-ciri imej yang terbentuk?
What are the characteristics of image formed?

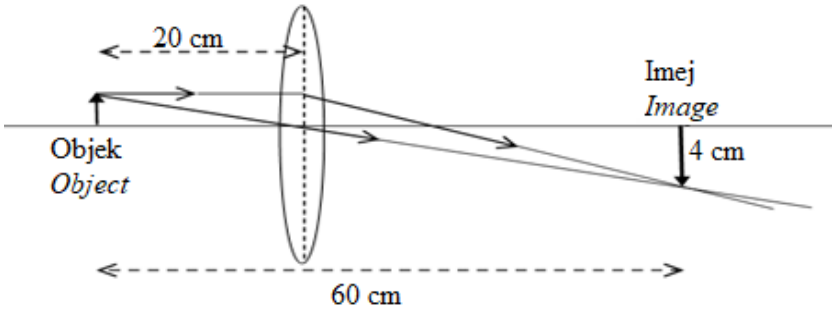
A Mengecil, tegak, maya
Diminished, upright, virtual

B Mengecil, songsang, nyata
Diminished, inverted, real

C Membesar, songsang, nyata
Magnified, inverted, real

D Membesar, tegak, maya
Magnified, upright, virtual

19 Rajah 14 menunjukkan pembentukan imej daripada suatu objek oleh kanta cembung.
Diagram 14 *shows the formation of an image from an object by a convex lens.*



Rajah 14
Diagram 14

Berapakah tinggi objek itu jika tinggi imejnya adalah 4 cm?
What is the height of the object if the height of its image is 4 cm?

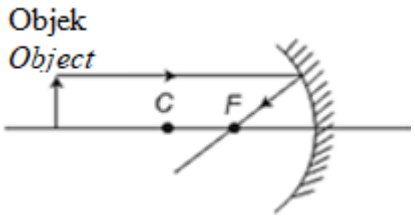
A 0.3 cm

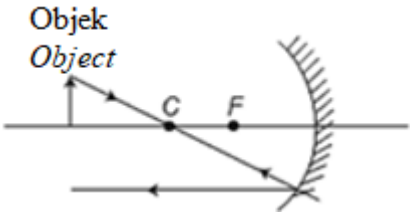
B 1.3 cm

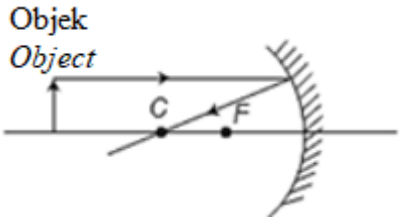
C 2.0 cm

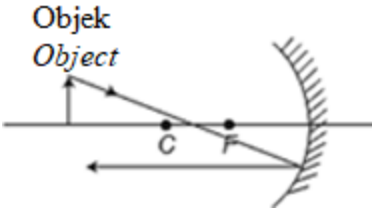
D 3.0 cm

20 Rajah manakah yang menunjukkan pantulan cahaya yang betul oleh sebuah cermin cekung?
Which diagram shows the correct reflection of light by a concave mirror?

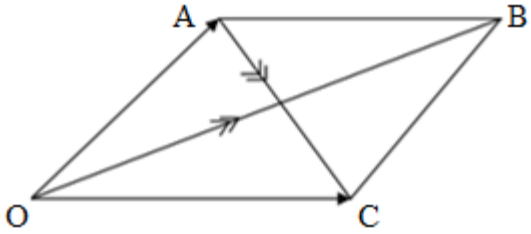
A


B


C


D


21 Rajah 15 menunjukkan kaedah menentukan paduan dua daya menggunakan segiempat selari.
Diagram 15 *shows a method of determining the resultant of two forces by using the parallelogram of forces.*



Rajah 15
Diagram 15

Antara berikut yang manakah menunjukkan daya paduan tersebut?
Which of the followings represents the resultant force?

A OA

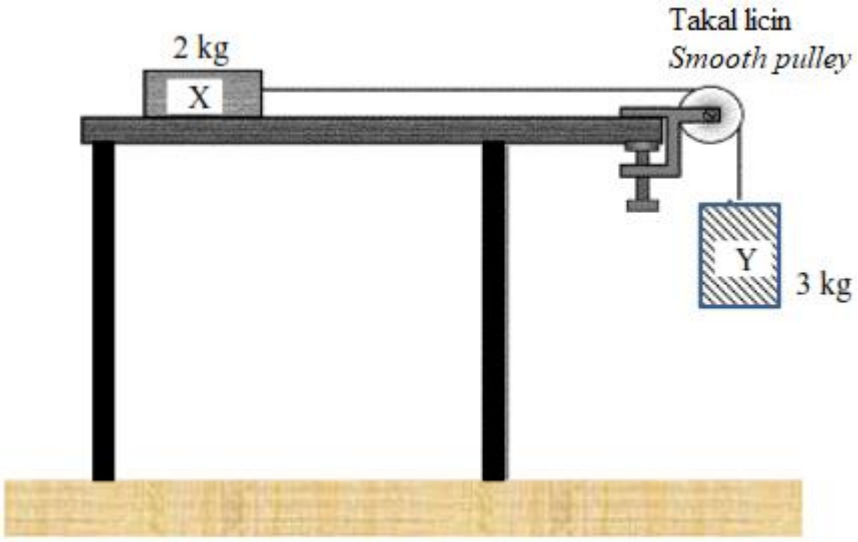
B OB

C OC

D AC

[Lihat halaman sebelah

22 Rajah 16 menunjukkan *X* dan *Y* yang dihubungkan oleh seutas tali melalui satu takal licin. Apabila sistem dilepaskan *X* dan *Y* memecut pada 4 ms^{-2}.
Diagram 16 *shows X and Y connected by a string over a smooth pulley. When the system is released, X and Y accelerates at* 4 ms^{-2}.



Rajah 16
Diagram 16

Apakah daya geseran antara *X* dan permukaan meja?
What is the friction force between X and the table surface?

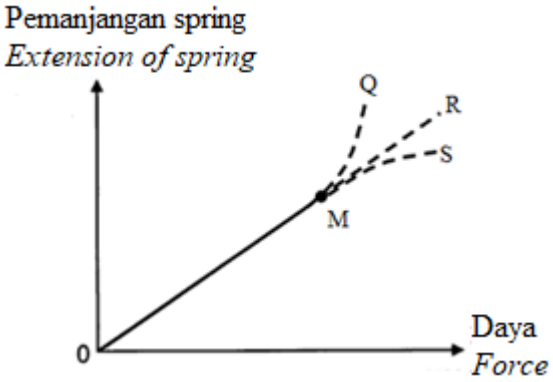
A 1.00 N

B 5.00 N

C 6.50 N

D 9.43 N

23 Rajah 17 menunjukkan graf pemanjangan spring melawan daya. Titik M adalah had kekenyalan spring.
Diagram 17 *shows a graph of extension of spring against force. Point M is the elastic limit of the spring.*



Rajah 17
Diagram 17

Apabila daya ditambah kepada spring, bentuk graf yang dihasilkan selepas titik M adalah
When the force is increased to the spring, the shape of the graph after point M is

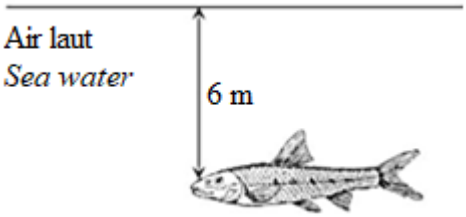
A MS

B MR

C MQ

D OM

24 Rajah 18 menunjukkan seekor ikan di dalam laut.
Diagram 18 *shows a fish in the sea.*



Rajah 18
Diagram 18

Hitungkan tekanan yang dikenakan oleh air ke atas ikan itu.
Calculate the pressure exerted by the water on the fish.
[Ketumpatan air = 1000 kg m^{-3}]
[*Density of water* =1000 kg m^{-3}]

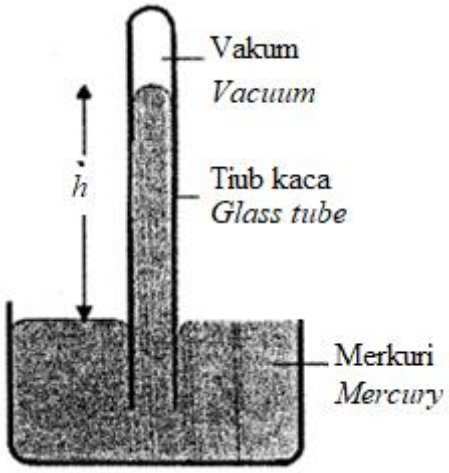
A 5.89×10^{4} Pa

B 5.89×10^{5} Pa

C 5.89×10^{7} Pa

D 5.89×10^{8} Pa

25 Rajah 19 menunjukkan sebuah barometer merkuri ringkas. Bacaan barometer ialah *h cm Hg.*
Diagram 19 *shows a simple mercury barometer. The barometer reading is h cm Hg.*



Rajah 19
Diagram 19

Apakah kuantiti fizikal yang diukur oleh *h*?
What is the physical quantity measured by h?

A Tekanan gas
Gas pressure

B Tekanan cecair
Liquid pressure

C Tekanan vakum
Vacuum pressure

D Tekanan atmosfera
Atmospheric pressure

26 Tekanan gas di dalam sebuah bekas tertutup adalah disebabkan oleh molekul gas
Gas pressure in an enclosed container is due to the gas molecules

A Bergerak secara rawak
Moving randomly

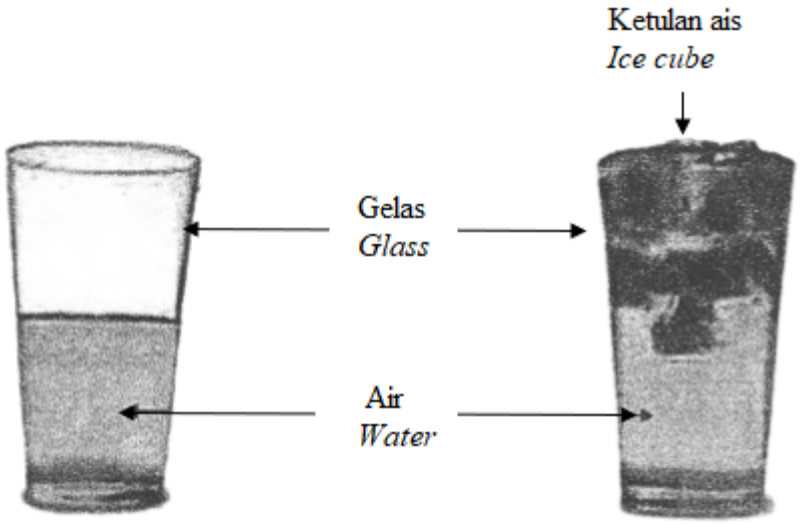
B Bergerak dengan halaju yang sama
Moving with equal speed

C Berlanggar sesama sendiri
Colliding with one another

D Berlanggar dengan dinding bekas
Colliding with the walls of the container

[Lihat halaman sebelah

27 Rajah 20 menunjukkan sebiji gelas sebelum dan selepas ketulan air dimasukkan ke dalam air.
Diagram 20 *shows a glass before and after ice cubes are put in the water.*



Rajah 20
Diagram 20

Antara pernyataan berikut, yang manakah **betul** mengenai ketulan ais?
Which of the following statements about the ice cubes is ***correct****?*

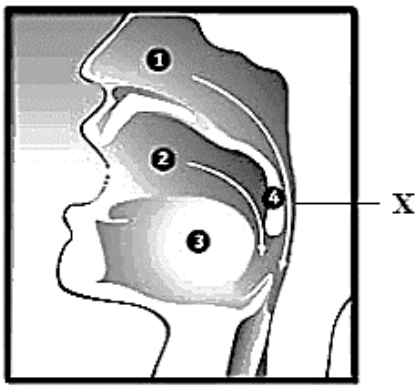
A Berat ketulan ais adalah melebihi berat air yang disesarkan.
The weight of ice cubes is more than the weight of water displaced.

B Berat ketulan ais adalah sama dengan isipadu air yang disesarkan.
The weight of ice cubes is equal to the volume of water displaced.

C Berat ketulan ais adalah sama dengan berat air yang disesarkan.
The weight of ice cubes is equal to the weight of water displaced.

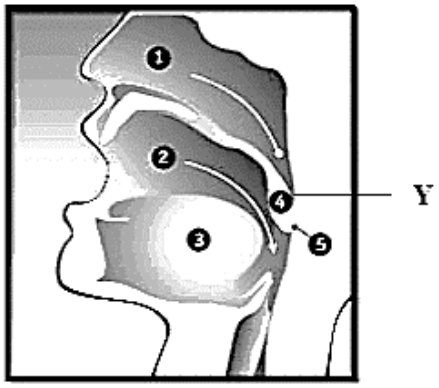
D Berat ketulan ais adalah kurang daripada berat air yang disesarkan.
The weight of ice cubes is less than the weight of water displaced.

28 Rajah 21.1 menunjukkan laluan udara yang normal bagi orang yang tidak berdengkur. Laluan udara "*nasal*" dan "*oral*" adalah terbuka (*X*).
Rajah 21.2 menunjukkan laluan udara bagi orang yang berdengkur. "*Uvula*" dan "*palate*" lembut separa menghalang laluan udara (*Y*) dan meningkatkan aliran udara melalui ruang sempit di dalam tiub berongga menyebabkan pengurangan tekanan pada ruang tersebut.
Diagram 21.1 *shows normal airway for a non-snoring person. The nasal and oral airways are open (X).*
Diagram 21.2 *shows the airways for a snoring person. The uvula and the soft palate partially block the airway (Y) increasing airflow through the narrowed areas in the hollow tube which causes a drop in the pressure at that point.*



Orang yang tidak berdengkur
Non-snoring person

Rajah 21.1
Diagram 21.1



Orang yang berdengkur
Snoring person

Rajah 21.2
Diagram 21.2

Fenomena ini dijelaskan oleh
This phenomenon is explained by

A Hukum Boyle
Boyle's law

B Prinsip Pascal
Pascal's principle

C Hukum Gay-Lussac
Gay-Lussac's law

D Prinsip Bernoulli
Bernoulli's principles

29 Suatu litar elektrik dihidupkan selama satu jam.
Hitungkan kuantiti cas elektrik yang mengalir dalam litar itu jika arus ialah 7A.
An electric circuit has been switched on for one hour.
Calculate the quantity of the electric charge passing through the circuit if the current is 7*A.*

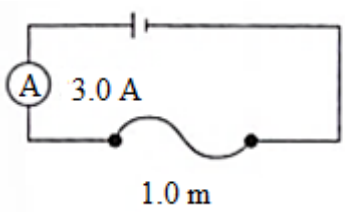
A 7 C

B 60 C

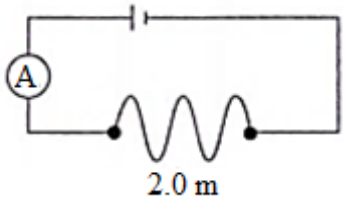
C 420 C

D 25 200 C

30 Rajah 22.1 menunjukkan seutas dawai sepanjang 1.0 m mempunyai 2.0 Ω. Apabila disambungkan ke sebiji sel kering, arus yang melalui dalam dawai ialah 3.0 *A*.
Rajah 22.2 menunjukkan seutas dawai yang sama sepanjang 2.0 m disambungkan di dalam litar tersebut.
Diagram 22.1 *shows a wire which is* 1.0 *m long has a resistance of* 2.0 *Ω. When connected to a dry cell, the current flowing through the wire is 3.0 A.*
Diagram 22.2 *shows a same wire which is* 2.0 *m long has connected in the circuit.*



Rajah 22.1
Diagram 22.1



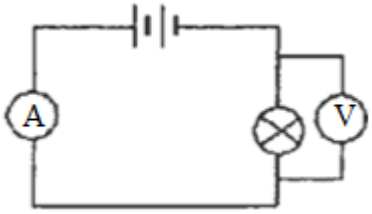
Rajah 22.2
Diagram 22.2

Tentukan nilai rintangan dan arus bagi litar dalam Rajah 22.2.
Determine the value of resistance and current for circuit in Diagram 22.2.

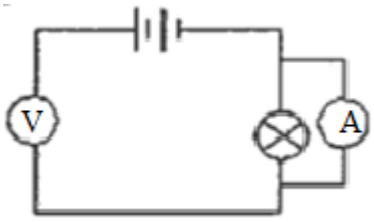
	Rintangan / Ω *Resistance / Ω*	Arus / *A* *Current / A*
A	1.0	3.0
B	2.0	1.5
C	4.0	1.5
D	4.0	3.0

31 Litar yang manakah boleh digunakan untuk menentukan daya gerak elektrik sebuah bateri?
Which circuit can be used to determine the electromotive force of a battery?

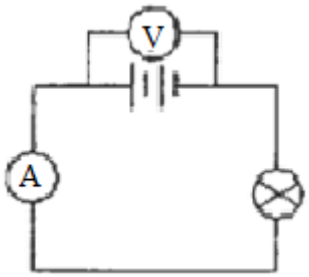
A



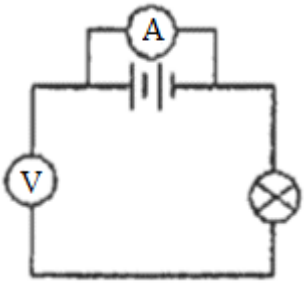
B



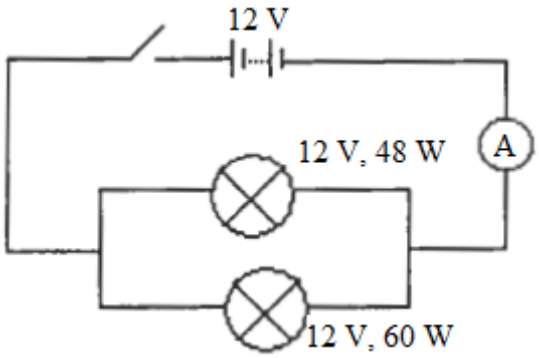
C



D



32 Rajah 23 menunjukkan satu litar elektrik.
Diagram 23 *shows an electric circuit.*



Rajah 23
Diagram 23

Apakah bacaan ammeter apabila suis ditutup?
What is the reading of the ammeter when the switch is closed?

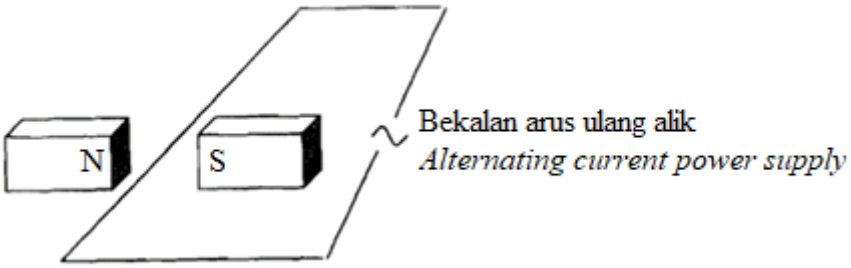
A 1 A

B 4 A

C 5 A

D 9 A

33 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

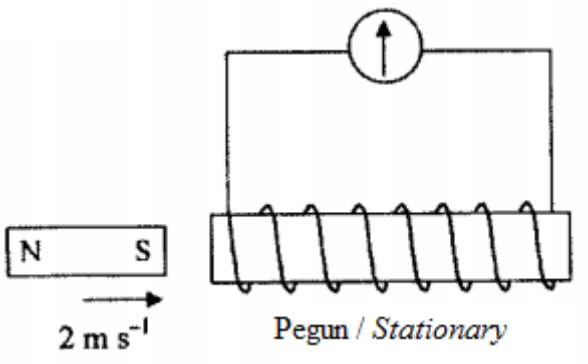
Ke arah manakah wayar itu akan bergerak?
Which direction will the wire move?

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

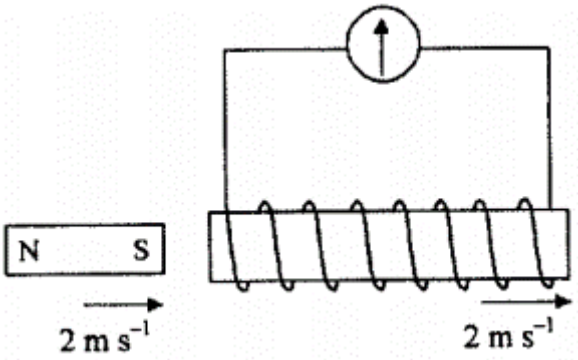
[Lihat halaman sebelah

34 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?

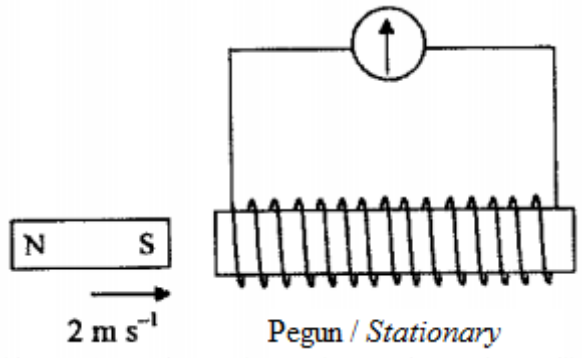
A



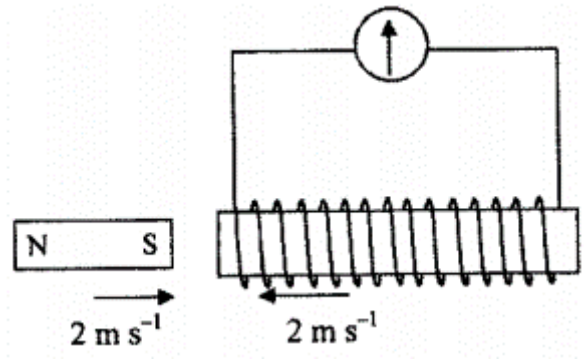
B



C



D



35 Manakah antara berikut benar tentang transformer injak turun?
Which of the following is true regarding to the step-down transformer?

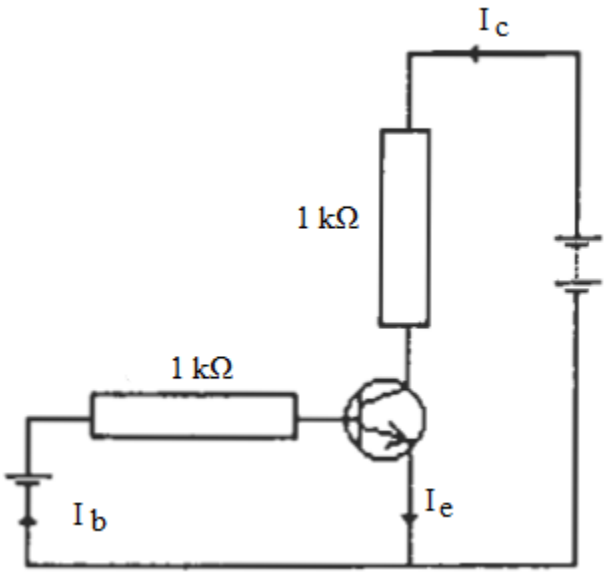
A Voltan output lebih besar berbanding dengan voltan input.
The output voltage greater than the input voltage.

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.

36 Satu transistor n-p-n disambungkan pada bekalan arus terus seperti dalam Rajah 25.
An n-p-n transistor is connected to a direct current power supply as shown in Diagram 25.



Rajah 25
Diagram 25

Antara berikut yang manakah **benar**?
*Which of the following is **correct**?*

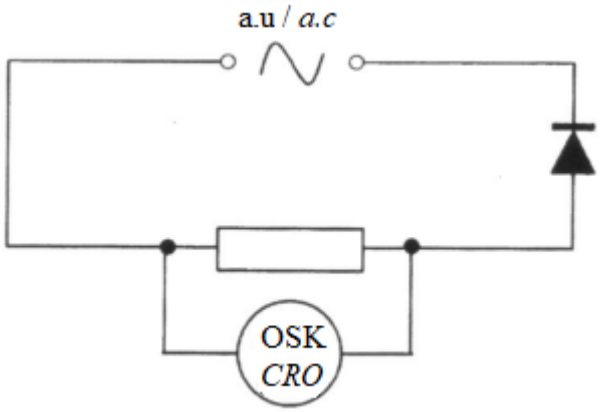
A $I_e > I_c > I_b$

B $I_e > I_b > I_c$

C $I_c > I_e > I_b$

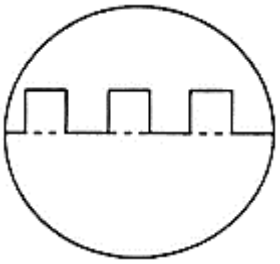
D $I_c > I_b > I_e$

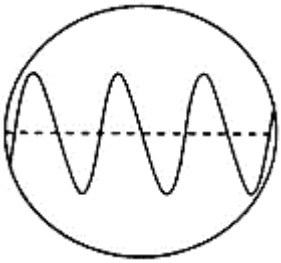
37 Rajah 26 menunjukkan litar dengan osiloskop sinar katod (OSK).
Diagram 26 *shows an electric circuit. The resistor is connected to cathode-ray-oscilloscope (CRO).*

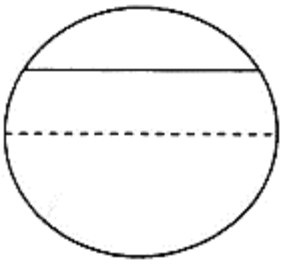


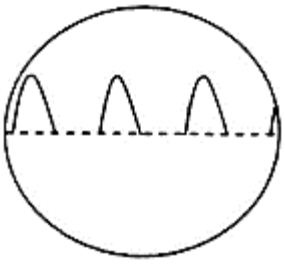
Rajah 26
Diagram 26

Surihan yang manakah akan dipaparkan pada skrin OSK?
Which trace would appear on screen of the CRO?

A


B


C


D


38 Dalam suatu tindak balas pembelahan, 0.09% daripada jisim uranium-235 ditukarkan kepada tenaga. Hitungkan tenaga yang dibebaskan apabila 1 g uranium-235 dibelahkan di dalam sebuah reactor nuklear.
In a fission reaction, 0.09*% of the mass of uranium*-235 *is changed to nuclear energy. Calculate the energy released when* 1 *g of uranium*-235 *is fissioned in a nuclear reactor.*
[Laju cahaya, $c = 3 \times 10^8$ m s^{-1}]
[*Speed of light*, $c = 3 \times 10^8$ m s^{-1}]

A 2.7×10^2 J

B 2.7×10^5 J

C 8.1×10^{10} J

D 8.1×10^{15} J

39 Dalam kesan fotoelektrik, jika panjang gelombang bagi cahaya tuju bertambah,
In photoelectric effect, if wavelength of incident light increases,

A tenaga kinetik maksimum bagi fotoelektron berkurang.
maximum kinetic energy of photoelectron decreases.

B tenaga kinetik maksimum bagi fotoelektron bertambah.
maximum kinetic energy of photoelectron increases.

C tenaga kinetik minimum bagi fotoelektron bertambah.
minimum kinetic energy of photoelectron increases.

D fungsi kerja bagi logam sasaran bertambah.
work function of the targeted metal increases.

[Lihat halaman sebelah

40 Panjang gelombang maksimum yang dapat membebaskan elektron daripada permukaan natrium ialah 650 nm. Tentukan tenaga kinetik maksimum bagi elektron yang dibebaskan daripada permukaan natrium jika cahaya dengan panjang gelombang 436 nm ditujukan pada permukaannya dalam vakum.
[Diberi hc = 1.243×10^3 eV nm, 1eV=1.60×10^{-19} J]
The maximum wavelength able to release electron from sodium surface is 650 *nm. Determine the maximum kinetic energy of electron ejected from sodium surface if light of wavelength* 436 *nm is incident on its surface in vacuum.*
[*Given hc* = 1.243×10^3 eV nm, *1eV*=1.60×10^{-19} J]

A 1.50×10^{-18} J

B 1.50×10^{-19} J

C 3.06×10^{-19} J

D 4.56×10^{-19} J

KERTAS PEPERIKSAAN TAMAT
END OF QUESTIONS PAPER