KEMENTERIAN PENDIDIKAN
Jabatan Pendidikan Negeri Terengganu

MODUL
PERKEMBANGAN PEMBELAJARAN
SPM 2025

MPP 3

FIZIK
KERTAS 1

Nama : .....

Kelas : .....

DISEDIAKAN OLEH PANEL AKRAM NEGERI TERENGGANU

MAKLUMAT UNTUK CALON

1. Kertas soalan ini mengandungi 40 soalan.
2. Jawab **semua** soalan.
3. Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.
4. Bagi setiap soalan hitamkan satu ruangan sahaja.
5. Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
6. Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.
7. Senarai rumus disediakan di halaman 3 dan 4.
8. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

INFORMATION FOR CANDIDATES

1. *This question paper consists of 40 questions.*
2. *Answer all questions.*
3. *Answer each question by blackening the correct space on the answer sheet.*
4. *Blacken only **one** space for each question.*
5. *If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.*
6. *The diagrams in the question provided are not drawn to scale unless stated.*
7. *A list of formula is provided on page 3 and 4.*
8. *You may use a non-programmable scientific calculator.*

Rumus-rumus berikut boleh membantu anda menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan

DAYA DAN GERAKAN I
FORCE AND MOTION I

1 $v = u + at$

2 $s = \frac{1}{2}(u + v)t$

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

4 $v^2 = u^2 + 2as$

5 Momentum = mv

6 $F = ma$

7 $g = 9.81\ m\,s^{-2}$ @ $9.81\ N\,kg^{-1}$

KEGRAVITIAN
GRAVITATIONAL

1 $F = \frac{Gm_1m_2}{r^2}$

2 $g = \frac{GM}{r^2}$

3 $F = \frac{mv^2}{r}$

4 $a = \frac{v^2}{r}$

5 $v = \frac{2\pi r}{T}$

6 $\frac{T_1^2}{r_1^3} = \frac{T_2^2}{r_2^3}$

7 $v = \sqrt{\frac{GM}{r}}$

8 $u = -\frac{GMm}{r}$

9 $v = \sqrt{\frac{2GM}{r}}$

10 $G = 6.67 \times 10^{-11}\ N\,m^2\,kg^{-1}$

HABA
HEAT

1 $Q = mc\Delta\theta$

2 $Q = ml$

3 $Q = Pt$

4 $P_1V_1 = P_2V_2$

5 $\frac{V_1}{T_1} = \frac{V_2}{T_2}$

6 $\frac{P_1}{T_1} = \frac{P_2}{T_2}$

GELOMBANG
WAVES

1 $V = f\lambda$

2 $\lambda = \frac{ax}{D}$

CAHAYA DAN OPTIK
LIGHT AND OPTICS

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

2 $n = \frac{\sin i}{\sin r}$

3 $n = \frac{1}{\sin c}$

4 $n = \frac{H}{h}$

5 $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

6 $n_1\sin\theta_1 = n_2\sin\theta_2$

7 Pembesaran linear, $m = \frac{v}{u}$

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

DAYA DAN GERAKAN II
FORCE AND MOTION II

1 $F = kx$

2 $E = \frac{1}{2}Fx$

3 $E = \frac{1}{2}kx^2$

TEKANAN
PRESSURE

1 $P = \frac{F}{A}$

2 $P = h\rho g$

3 $\rho = \frac{m}{V}$

ELEKTRIK
ELECTRICITY

1 $E = \frac{F}{Q}$

2 $I = \frac{Q}{t}$

3 $V = \frac{E}{Q}$

4 $V = IR$

5 $R = \frac{\rho \ell}{A}$

6 $\varepsilon = V + Ir$

7 $P = VI$

8 $P = \frac{E}{t}$

9 $E = \frac{V}{d}$

KEELEKTROMAGNETAN
ELECTROMAGNETISM

1 $\frac{V_s}{V_p} = \frac{N_s}{N_p}$

2 $\eta = \frac{\text{Kuasa output}}{\text{Kuasa input}} \times 100\%$

$\eta = \frac{\textit{Output power}}{\textit{Input power}} \times 100\%$

ELEKTRONIK
ELECTRONICS

1 Tenaga keupayaan elektrik, $E = eV$
Electrical potential energy, $E = eV$

2 Tenaga kinetik maksimum, $E = \frac{1}{2}mv^2$
Maximum kinetics energy, $E = \frac{1}{2}mv^2$

3 $\beta = \frac{I_c}{I_B}$

FIZIK NUKLEAR
NUCLEAR PHYSICS

1 $N = \left(\frac{1}{2}\right)^n N_o$

2 $E = mc^2$

3 $c = 3.00 \times 10^8 \text{ m s}^{-1}$

4 $1 \text{ u.j.a.} = 1.66 \times 10^{-27} \text{ kg}$
$1 \text{ u.m.u.} = 1.66 \times 10^{-27} \text{ kg}$

FIZIK KUANTUM
QUANTUM PHYSICS

1 $E = hf$

2 $f = \frac{c}{\lambda}$

3 $\lambda = \frac{h}{p}$

4 $\lambda = \frac{h}{mv}$

5 $E = \frac{hc}{\lambda}$

6 $p = nhf$

7 $hf = W + \frac{1}{2}mv^2_{maks}$

8 $w = hf_o$

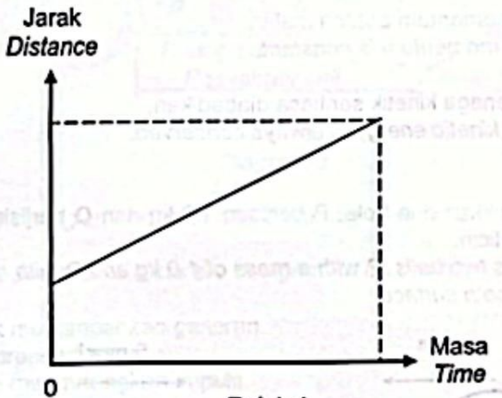
9 $h = 6.63 \times 10^{-34} \text{ J s}$

1 Apakah unit S.I. bagi kuantiti fizik arus elektrik?
What is the S.I. unit for physical quantity of electric current?

A Coulomb (C) B Watt (W)

C Ampere (A) D Volt (V)

2 Rajah 1 menunjukkan graf jarak-masa yang dilalui oleh sebuah kereta yang bergerak.
Diagram 1 shows a graph distance-time travelled by a moving car.



Rajah 1
Diagram 1

Jika kecerunan graf itu semakin bertambah, apakah yang akan berlaku terhadap gerakan kereta?
If the gradient of the graph is more steeper, what will happen to the car's motion?

A Kereta bergerak dengan pecutan negatif.
The car is moving with negative acceleration.

B Kereta bergerak dengan laju seragam yang lebih rendah.
The car is moving with a lower uniform speed.

C Kereta bergerak dengan laju seragam yang lebih tinggi.
The car is moving with a higher uniform speed.

D Kereta bergerak dalam arah yang bertentangan.
The car is moving in the opposite direction.

3 Antara pernyataan berikut, yang manakah **betul** tentang Prinsip Keabadian Momentum dalam sistem tertutup?
*Which of the following statements is **correct** about the Principle of Conservation of Momentum in a closed system?*

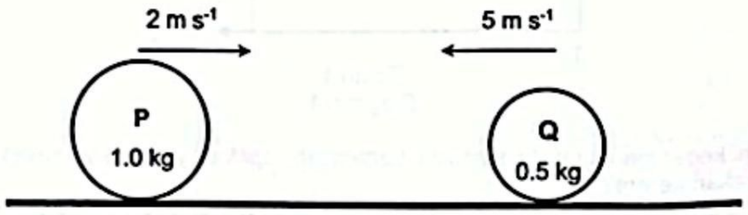
A Daya impuls adalah sifar.
The impulsive force is zero.

B Jisim objek sentiasa berubah.
The mass of an object is always changing.

C Jumlah momentum adalah malar.
The total momentum is constant.

D Jumlah tenaga kinetik sentiasa diabadikan.
The total kinetic energy is always conserved.

4 Rajah 2 menunjukkan dua bola, **P** berjisim 1.0 kg dan **Q** berjisim 0.5 kg bergerak di atas permukaan licin.
*Diagram 2 shows two balls, **P** with a mass of 1.0 kg and **Q** with a mass of 0.5 kg moving on a smooth surface.*



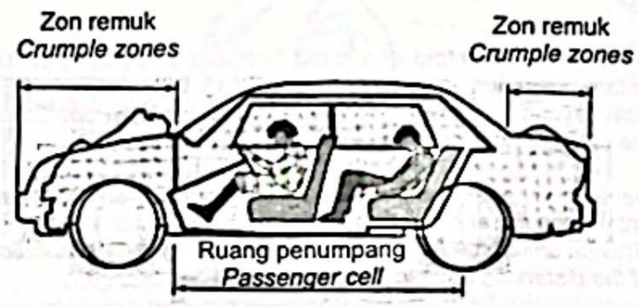
Rajah 2
Diagram 2

Jika kedua-dua bola itu melekat sejurus selepas perlanggaran, berapakah halaju akhir sepunya mereka?
If both of the balls are sticking together immediately after the collision, what is their common final velocity?

A $-3.00\ m\ s^{-1}$ **B** $-0.33\ m\ s^{-1}$

C $0.33\ m\ s^{-1}$ **D** $3.00\ m\ s^{-1}$

5 Rajah 3 menunjukkan bahagian zon remuk sebuah kereta.
Diagram 3 shows the parts of the crumpled zone of a car.



Rajah 3
Diagram 3

Mengapakah bahagian hadapan dan belakang sebuah kereta direka supaya mudah remuk?
Why the front and rear of a car are designed to be easily crumpled?

A Untuk menambahkan geseran.
To increase friction.
B Untuk mengurangkan impuls.
To reduce impulse.
C Untuk mengurangkan momentum.
To reduce momentum.
D Untuk menambahkan masa hentaman.
To increase the time of impact.

6 Mengapakah seorang angkasawan yang memakai sut angkasawan akan berasa sukar untuk berjalan di atas permukaan Bumi berbanding dengan bulan?
Why would an astronaut wearing a space suit find it difficult to walk on the surface of the Earth compared to the moon?

A Graviti di Bumi lebih kuat berbanding di Bulan.
Gravity on the Earth is stronger than on the Moon.

B Permukaan Bumi lebih keras daripada permukaan Bulan.
The surface of the Earth is harder than the surface of the Moon.

C Sut angkasawan direka khas untuk persekitaran graviti rendah.
Spacesuits are specially designed for low-gravity environments.

D Suhu di Bumi menyebabkan sut angkasawan menjadi kurang fleksibel.
Temperatures on the Earth cause spacesuits to become less flexible.

7 Antara pernyataan berikut, manakah adalah **betul** tentang Hukum Kegravitian Semesta Newton?
*Which of the following statements is **correct** about Newton's Law of Universal Gravitation?*

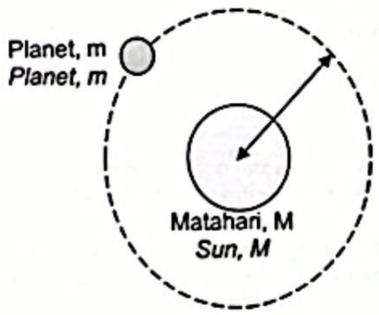
A Daya graviti di antara dua jasad berkadar terus dengan kuasa dua jarak di antara pusat dua jasad itu.
Gravitational force between two bodies is directly proportional to the square of the distance between the centre of the two bodies.

B Daya graviti di antara dua jasad berkadar songsang dengan kuasa dua jarak antara dua pusat jasad itu.
Gravitational force between two bodies is inversely proportional to the square of the distance between the centre of the two bodies.

C Daya graviti di antara dua jasad berkadar songsang dengan kuasa tiga di antara dua pusat jasad itu.
Gravitational force between two bodies is inversely proportional to the cube of the distance between the centre of the two bodies.

D Daya graviti di antara dua jasad berkadar songsang dengan jarak antara dua pusat jasad itu.
Gravitational force between two bodies is inversely proportional to the distance between the centre of the two bodies.

8 Rajah 4 menunjukkan sebuah planet berjisim m, bergerak dalam satu orbit membulat berjejari r, mengelilingi matahari, M. Planet itu mengambil tempoh orbit, T untuk membuat satu putaran lengkap.
Diagram 4 shows a planet of mass, m, moves in a circular orbit of radius, r, around the sun of mass, M. The planet takes an orbital period, T, to complete one revolution.



Rajah 4
Diagram 4

Antara berikut, yang manakah menunjukkan hubungan yang **betul** antara T, m, M, dan r?
*Which of the following shows the **correct** relationship between T, m, M and r?*

A $T \propto m^2$ B $T \propto Mm$

C $T \propto r^3$ D $T^2 \propto r^3$

9 Rajah 5 menunjukkan sebuah satelit komunikasi yang sedang mengorbit Bumi.
Diagram 5 shows a communication satellite orbiting the Earth.

Rajah 5
Diagram 5

Apakah tempoh satelit tersebut mengorbit Bumi?
What is the period of the satellite orbiting the Earth?

A 6 jam
6 hours

B 12 jam
12 hours

C 24 jam
24 hours

D 48 jam
48 hours

10 Jadual 1 menunjukkan muatan haba tentu bagi bahan R, S dan T.
Table 1 shows the specific heat capacities of materials R, S and T.

Bahan *Materials*	Muatan haba tentu/ J kg^{-1} °C^{-1} *Specific heat capacity/* J kg^{-1} °C^{-1}
R	428
S	850
T	3 500

Jadual 1
Table 1

Berdasarkan Jadual 1, pasangan bahan manakah yang paling sesuai untuk menghasilkan peralatan memasak?
Based on Table 1, which pair of materials is most suitable for producing a cooking utensil?

	Dasar kuali *Base of a frying pan*	Pemegang kuali *Handle of a frying pan*
A	R	T
B	T	R
C	S	R
D	T	S

11 Kuantiti haba yang diserap semasa peleburan 1 kg ais tanpa perubahan suhu.
The quantity of heat absorbed during the melting of 1 kg of ice without a change in temperature.

Antara berikut, konsep manakah menerangkan pernyataan di atas?
Which of the following concepts explains the statement above?

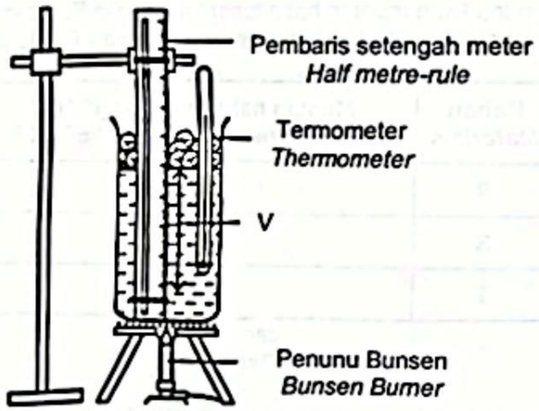
A Muatan haba
Heat capacity

B Muatan haba tentu
Specific heat capacity

C Haba pendam tentu pelakuran
Specific latent heat of fusion

D Haba pendam tentu pengewapan
Specific latent heat of vaporization

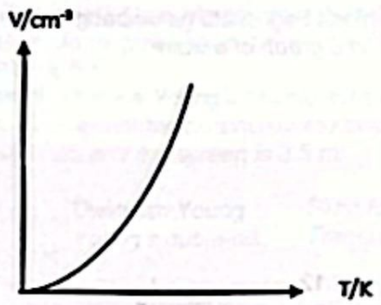
12 Rajah 6 menunjukkan susunan radas untuk mengkaji hubungan antara isipadu turus udara terperangkap, V dan suhu, T bagi satu jisim udara malar.
Diagram 6 shows an arrangement of apparatus to investigate the relationship between the volume of a trapped air column, V and the temperature, T for a fixed mass of air.

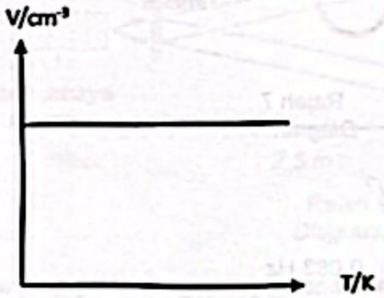


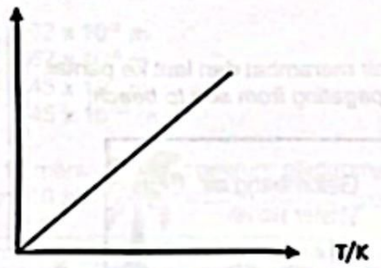
Rajah 6
Diagram 6

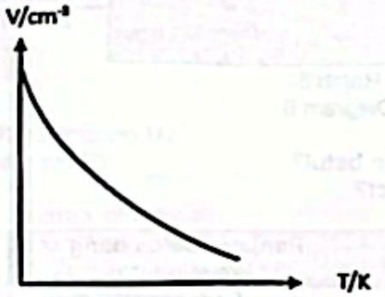
Graf yang manakah menunjukkan hubungan V dengan T, di mana T ialah suhu dalam unit Kelvin?

Which of the following graphs shows the relationship between V and T, where T is temperature measured in Kelvin?

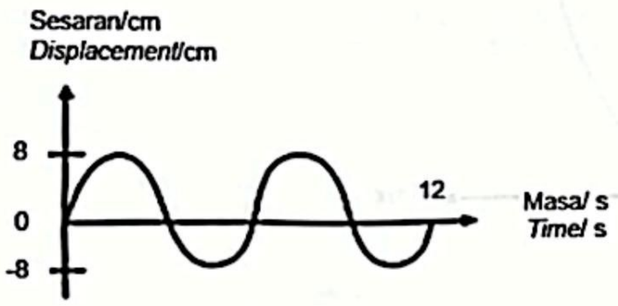
A


B


C


D


13 Rajah 7 menunjukkan graf sesaran-masa bagi suatu gelombang
Diagram 7 shows the displacement-time graph of a wave.



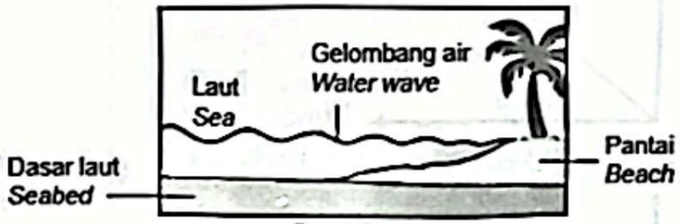
Rajah 7
Diagram 7

Berapakah frekuensi gelombang itu?
What is the frequency of the wave?

A 0.063 Hz B 0.083 Hz

C 0.125 Hz D 0.167 Hz

14 Rajah 8 menunjukkan gelombang air merambat dari laut ke pantai.
Diagram 8 shows water waves propagating from sea to beach.

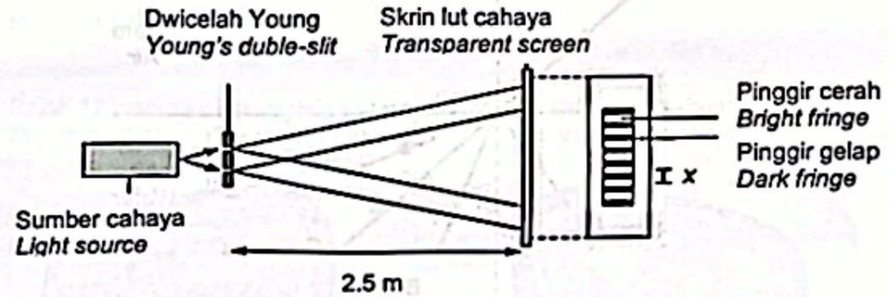


Rajah 8
Diagram 8

Manakah bagi situasi di atas adalah **betul**?
Which for above situation is correct?

	Kedalaman *Depth*	Panjang Gelombang *Wavelength*
A	Berkurang *Decrease*	Berkurang *Decrease*
B	Berkurang *Decrease*	Bertambah *Increase*
C	Bertambah *Increase*	Berkurang *Decrease*
D	Bertambah *Increase*	Bertambah *Increase*

15 Rajah 9 menunjukkan eksperimen dwicelah Young menghasilkan corak interferens pada skrin. Jarak pemisahan dwicelah ialah 0.5 mm dan jarak antara dwicelah dengan skrin ialah 2.5 m.
Diagram 9 shows a Young's double-slit experiment produces interference pattern on screen. The separation distance of the double-slit is 0.5 mm and the distance between the double-slit and the screen is 2.5 m.



Rajah 9
Diagram 9

Jika panjang gelombang cahaya monokromatik ialah 7.24×10^{-7} m, berapakah nilai x?
If the wavelength of monochromatic light is 7.24×10^{-7} m, what is the value of x?

A 3.62×10^{-3} m
B 3.62×10^{-6} m
C 1.45×10^{-7} m
D 1.45×10^{-10} m

16 Rajah 10 menunjukkan spekrum electromagnet.
Diagram 10 shows an electromagnetic spectrum.

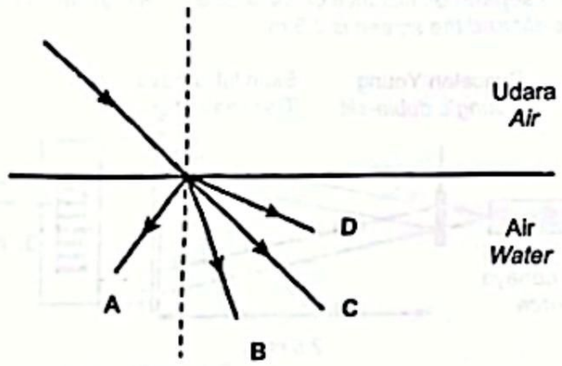
Gelombang radio *Radiowave*	Gelombang mikro *Microwave*	S	T	U	Sinar-X *X-ray*	V

Rajah 10
Diagram 10

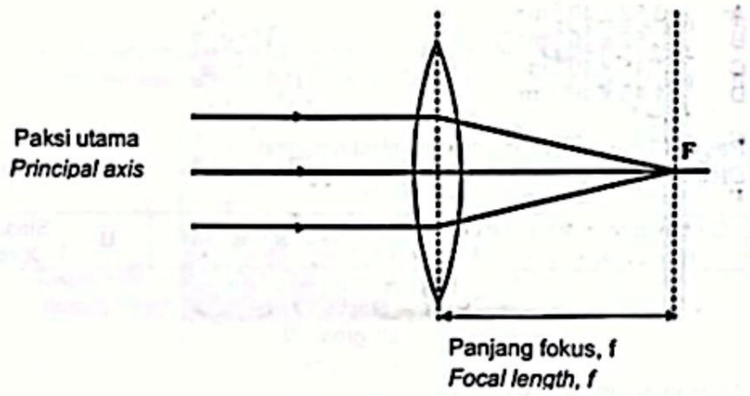
Apakah gelombang **U**?
What is wave U?

A Sinaran inframerah *Infrared ray*
B Sinaran ultraungu *Ultraviolet ray*
C Cahaya nampak *Visible light*
D Sinar gama *Gamma ray*

17 Antara berikut yang manakah menunjukkan laluan cahaya yang betul apabila cahaya merambat melalui dua medium berbeza?
Which of the following shows the correct light path when light propagates through two different mediums?



18 Rajah 11 menunjukkan sinar cahaya yang selari ditumpukan pada titik fokus, F kanta selepas melalui sebuah kanta cembung.
Diagram 11 shows parallel light rays converged at a focal point of the lens after passing through a convex lens.



Rajah 11
Diagram 11

Apakah yang akan berlaku pada panjang fokus, f apabila kanta cembung yang berdiameter lebih besar digunakan?
What will happen to the focal length, f when a convex lens with larger diameter is used?

A Lebih panjang
Longer

B Lebih pendek
Shorter

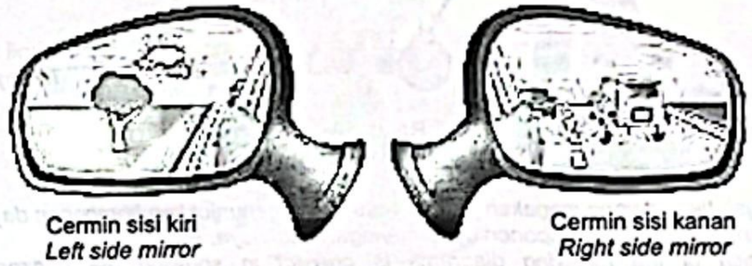
C Tidak berubah
No change

19 Suatu objek diletakkan pada jarak 60.0 cm dari kanta cekung dengan panjang fokus 20.0 cm. Hitung pembesaran linear imej yang terbentuk.
An object is placed at a distance of 60.0 cm from a concave lens of focal length 20.0 cm. Calculate the linear magnification of image formed.

A 30.0 **B** 15.0

C 0.50 **D** 0.25

20 Rajah 12 menunjukkan cermin sisi kiri dan cermin sisi kanan sebuah kereta.
Diagram 12 shows the left side mirror and the right side mirror of a car.



Cermin sisi kiri
Left side mirror

Cermin sisi kanan
Right side mirror

Rajah 12
Diagram 12

Antara berikut, manakah merupakan kelebihan menggunakan cermin cembung sebagai cermin sisi kereta?
Which of the following is an advantage of using a convex mirror as car side mirrors?

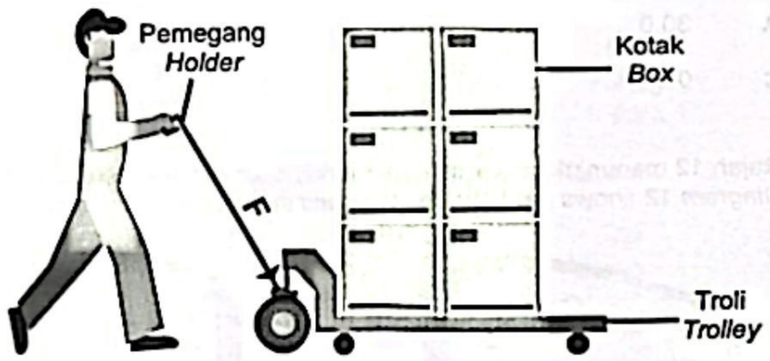
A Memberikan imej yang lebih tajam.
Provides a sharper image.

B Medan penglihatan yang lebih luas.
Wider field of view.

C Pantulan cahaya yang lebih banyak.
More reflection of light.

D Menghasilkan imej yang diperbesarkan.
Produces a magnified image.

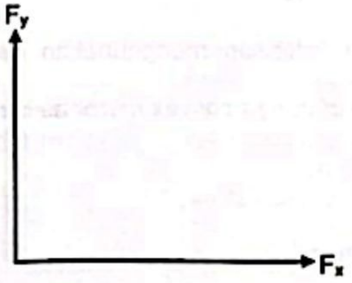
21 Rajah 13 menunjukkan seorang pekerja menolak troli berisi beberapa kotak dengan daya, F.
Diagram 13 shows a worker pushing a trolley containing a few of boxes with a force F.



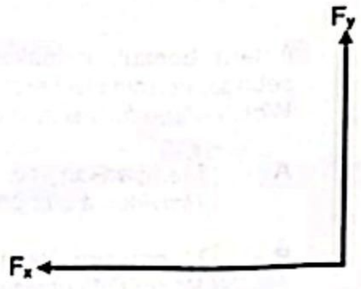
Rajah 13
Diagram 13

*Rajah berikut yang manakah adalah **betul** bagi menunjukkan komponen daya mengufuk, F_x dan komponen daya menegak bagi daya, F_y.*
*Which of the following diagrams is **correct** in showing the horizontal force component, F_x and the vertical force component of the force, F_y?*

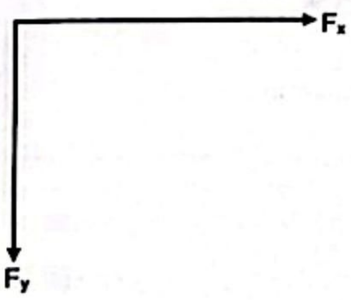
A



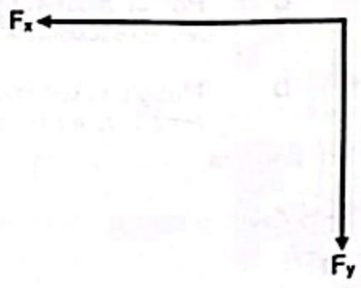
B



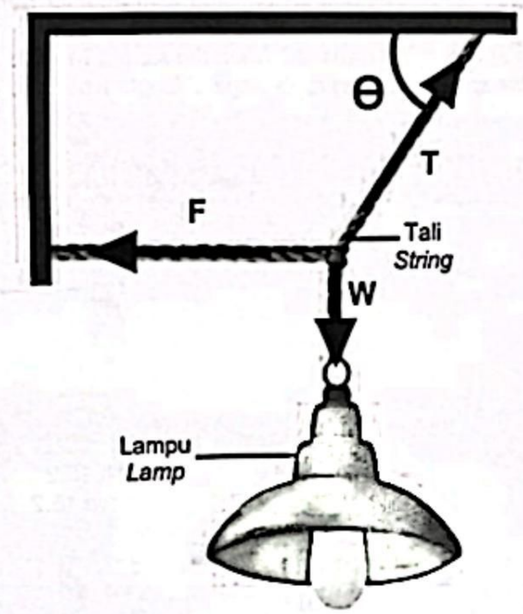
C



D



22 Rajah 14 menunjukkan sebuah lampu digantung menggunakan dua tali.
Diagram 14 shows a lamp hanging from two strings.



Rajah 14
Diagram 14

Persamaan manakah yang **betul**?
Which equation is correct?

I $T + F + W = 0$
II $T = F = W$
III $T \cos \theta = F$
IV $T \cos \theta = W$

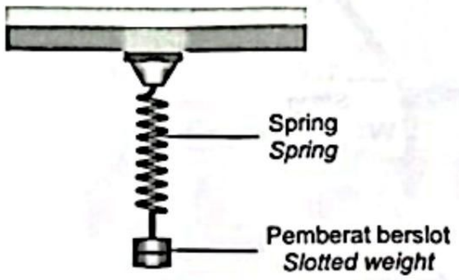
A I dan II
I and II

B I dan III
I and III

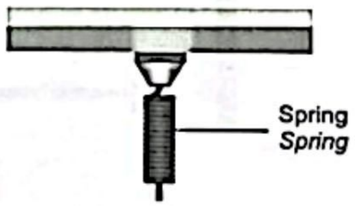
C II dan III
II and III

D II dan IV
II and IV

23 Rajah 15.1 menunjukkan satu spring diregangkan apabila pemberat berslot diletakkan.
Rajah 15.2 menunjukkan spring kembali ke panjang asal apabila pemberat berslot dialihkan.
Diagram 15.1 shows a spring being stretched when the slotted weights is placed.
Diagram 15.2 shows the spring returning to its original length when the slotted weights is removed.



Rajah 15.1
Diagram 15.1

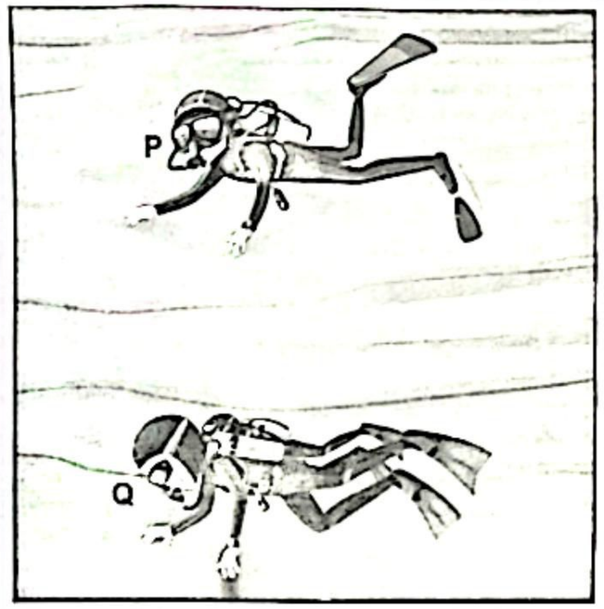


Rajah 15.2
Diagram 15.2

Antara berikut, manakah yang terlibat dengan situasi di atas?
Which of the following is involved in the above situation?

	Hukum *Law*	Hubungan *Relationship*
A	Hukum Kekenyalan *Elasticity's Law*	$F \alpha k$
B	Hukum Kekenyalan *Elasticity's Law*	$F \alpha x$
C	Hukum *Hooke* *Hooke's Law*	$F \alpha x$
D	Hukum *Hooke* *Hooke's Law*	$F \alpha k$

24 Rajah 16 di bawah menunjukkan dua orang penyelam dalam air laut pada kedalaman berbeza, P dan Q. Jisim kedua-dua penyelam bersama peralatannya adalah sama.
Diagram 16 shows two divers in sea water at different depths, P and Q. The mass of both divers and their equipment is the same.



Rajah 16
Diagram 16

Antara penyataan berikut yang manakah **betul** menerangkan situasi di atas?
*Which of the following statement is **correct** about the above situation ?*

A Semakin bertambah kedalaman air, semakin berkurang daya apungan.
The larger the depth of water, the lower the buoyant force.

B Semakin bertambah kedalaman air, semakin berkurang tekanan.
The larger the depth of water, the lower the pressure.

C Semakin bertambah kedalaman air, semakin bertambah daya apungan.
The larger the depth of water, the higher the buoyant force.

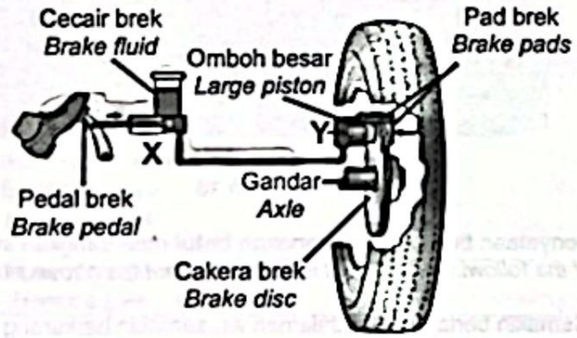
D Semakin bertambah kedalaman air, semakin bertambah tekanan.
The larger the depth of water, the higher the pressure.

25 Antara berikut, alat manakah digunakan untuk mengukur tekanan atmosfera?
Which of the following instrument is used to measure the atmospheric pressure?

I Manometer
Manometer
II Barometer Fortin
Fortin barometer
III Barometer Aneroid
Aneroid barometer
IV Barometer merkuri ringkas
Simple mercury barometer

A I dan II
I and II
B II dan III
II and III
C II, III dan IV
II, III and IV
D Semua di atas
All of the above

26 Rajah 17 menunjukkan satu sistem brek hidraulik.
Diagram 17 shows a hydraulic brake system.



Rajah 17
Diagram 17

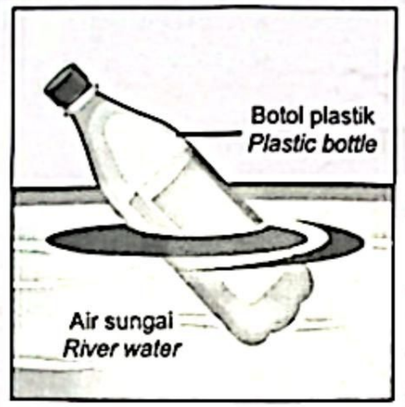
Antara pernyataan berikut manakah yang **betul** apabila suatu daya dikenakan ke atas pedal?
*Which of the following statements is **correct** when a force is applied to the brake pedal?*

A Daya yang bertindak ke atas X < Daya yang bertindak ke atas Y.
Force acted on X < Force acted on Y.

B Daya yang bertindak ke atas X > Daya yang bertindak ke atas Y.
Force acted on X > Force acted on Y.

C Daya yang bertindak ke atas X = Daya yang bertindak ke atas Y.
Force acted on X = Force acted on Y.

27 Rajah 18 menunjukkan satu botol plastik sedang terapung di dalam air sungai.
Diagram 18 shows a plastic bottle floating in river water.

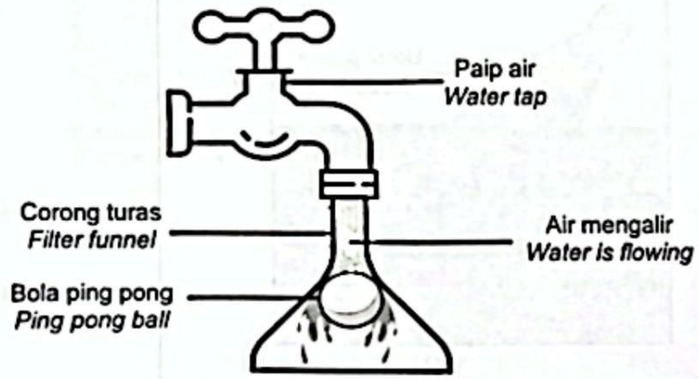


Rajah 18
Diagram 18

Apakah yang akan berlaku kepada daya apungan dan isipadu air disesarkan oleh botol plastik itu apabila ianya diletakkan dalam air laut?
What will happen to the buoyancy and volume of water displaced by the plastic bottle when it is placed in seawater?

	Daya apungan *Buoyant force*	Isipadu air disesarkan *Volume of water displaced*
A	Bertambah *Increase*	Bertambah *Increase*
B	Tidak berubah *Unchange*	Tidak berubah *Unchange*
C	Tidak berubah *Unchange*	Berkurang *Decrease*
D	Berkurang *Decrease*	Berkurang *Decrease*

28 Rajah 19 menunjukkan bola ping pong yang terapung dalam corong turas dengan aliran air daripada paip air.
Diagram 19 shows a ping pong ball floating in a funnel with water flowing from a water pipe.



Rajah 19
Diagram 19

Prinsip manakah yang **betul** untuk menerangkan situasi di atas?
*Which statement is **correct** to explain the phenomena?*

A Prinsip Pascal
Pascal's Principle

B Prinsip Bernoulli
Pascal's Principle

C Prinsip Archimedes
Archimedes Principle

D Prinsip keseimbangan Terma
Thermal equilibrium principle

29 Antara pernyataan berikut yang manakah **betul** untuk menerangkan rintangan?
*Which of the following statements is **correct** to describe resistance?*

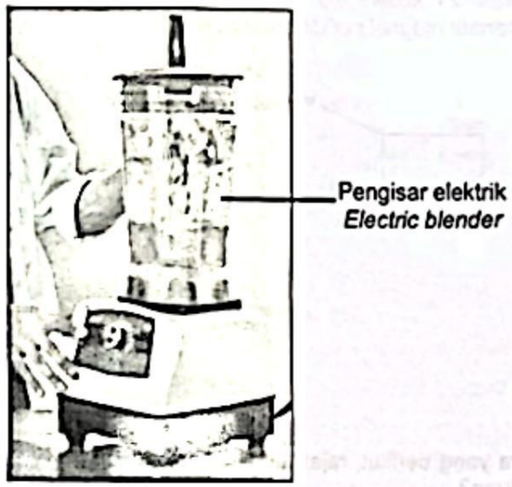
A penentangan terhadap *arus mengalir dalam litar elektrik.*
the opposition to current flow in an electrical circuit.

B penentangan terhadap kuasa dihasilkan dalam litar elektrik.
the opposition to power generated in an electrical circuit.

C penentangan terhadap tenaga yang hilang dalam litar elektrik.
the opposition to energy dissipated in an electrical circuit.

D penentangan terhadap beza keupayaan merentasi litar elektrik.
the opposition to potential across an electrical circuit.

30 Rajah 20 menunjukkan sebuah pengisar elektrik berlabel "240V, 350W".
Diagram 20 shows an electric blender labelled "240V, 350W".



Rajah 20
Diagram 20

Berapakah nilai tenaga elektrik jika telah digunakan untuk mengisar buah epal selama 2 minit?
What is the amount of electrical energy if it was consumed to grind an apple for 2 minutes?

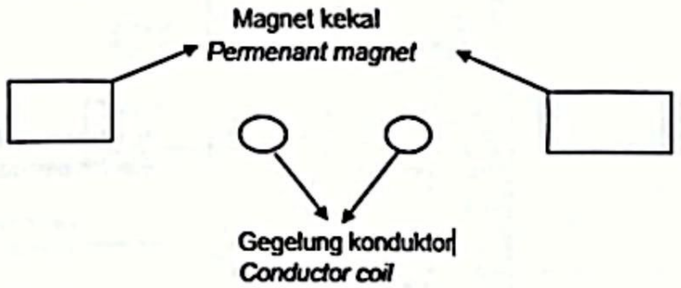
A 175 J

B 700 J

C 28800 J

D 42000 J

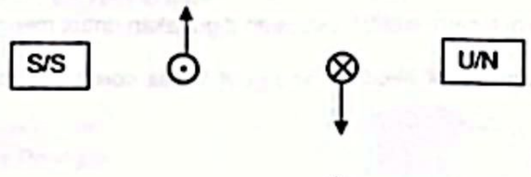
31 Rajah 21 menunjukkan keratan rentas gegelung konduktor yang melalui dua magnet kekal yang berlainan kutub.
Diagram 21 shows the cross-section of a coil of conductor passing through two permanent magnets of different poles.



Rajah 21
Diagram 21

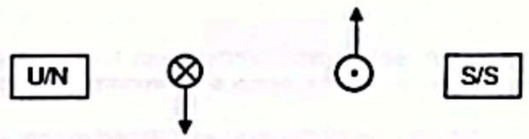
Antara yang berikut, rajah yang manakah **betul** jika arus mengalir dalam konduktor gegelung?
*Which of the following diagrams is **correct** if current flows in a coiled conductor?*

A

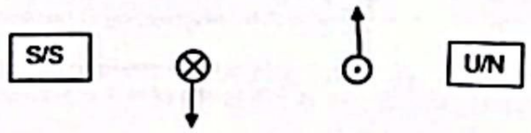


B

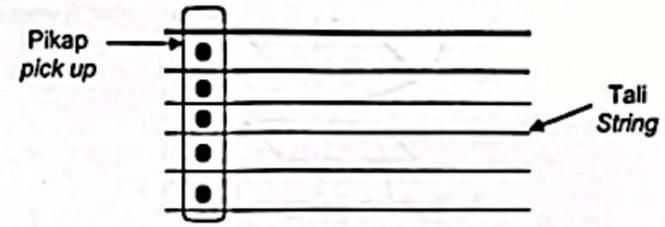
C



D



32 Rajah 22 menunjukkan sebuah gitar elektrik.
Diagram 22 shows an electric guitar.



Rajah 22
Diagram 22

Apakah fungsi pikap dalam penghasilan bunyi gitar elektrik?
What is the function of pick up in producing the sound of electric guitar?

A Menghasilkan medan magnet
Produce magnetic field

B Tempat terhasilnya arus aruhan
The place where induced current produce

C Menguatkan arus aruhan
Amplify the induce current

D Menghasilkan gerakan yang memotong fluks magnet
Produce the motion than cut the magnetic flux

33 Apakah faktor yang menyebabkan teras besi berlamina digunakan untuk meningkatkan kecekapan transformer?
What factors cause laminated iron cores to be used to increase the efficiency of transformer?

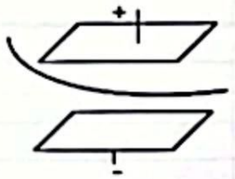
A Histerisis
Hysteresis

B Arus pusar
Eddy current

C Kekuatan medan magnet
Magnetic field strength

D Kehilangan fluks magnet
Magnetic flux loss

34 Rajah 23 menunjukkan sinar katod dalam satu tiub vakum.
Diagram 23 shows a cathode ray in a vacuum tube.



Rajah 23
Diagram 23

Antara yang berikut, pernyataan manakah boleh disimpulkan dengan sinar katod?
Which of the following can conclude the cathode ray?

A Menghasilkan kesan berpendaflour.
Produces a fluorescent effect.

B Boleh dipesongkan oleh medan elektrik.
Can be deflected by an electric field.

C Boleh dipesongkan oleh medan magnet.
Can be deflected by magnetic fields.

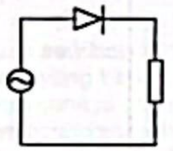
D Mempunyai momentum dan tenaga kinetik.
Has momentum and kinetic energy.

35 Rajah 24 menunjukkan graf bagi arus output yang terhasil dalam Osiloskop Sinar Katod (OSK).
Diagram 24 shows a graph of the output current produced in a Cathode Ray Oscilloscope (CRO).

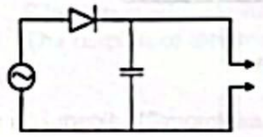
Rajah 24
Diagram 24

Antara berikut, litar manakah yang menghasilkan output seperti di atas?
Which of the following circuits produces the output as above?

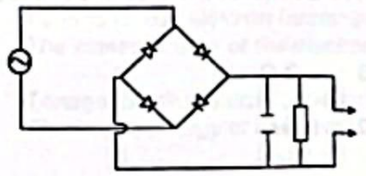
A



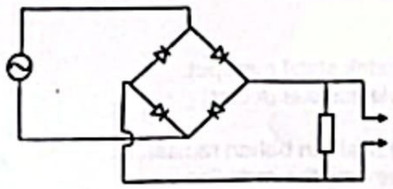
B



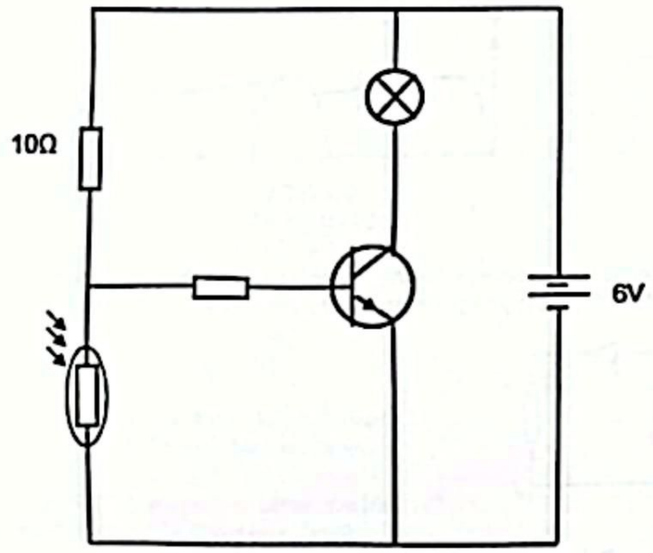
C



D



36 Rajah 25 menunjukkan sebuah litar pembahagi voltan yang mempunyai Perintang Peka Cahaya (PPC) sebagai perintang boleh laras.
Diagram 25 shows a voltage divider circuit that has a Light Detective Resistor (LDR) as an adjustable resistor.



Rajah 25
Diagram 25

Berapakah nilai rintangan pada PPC jika voltan minimum 2V diperlukan untuk menyalakan mentol?
What is the resistance value of the LDR if a minimum voltage of 2V is required to light the bulb?

A 2 Ω B 3 Ω
C 4 Ω D 5 Ω

37 Apakah yang dimaksudkan dengan separuh hayat?
What is the meaning of half-life?

A Masa untuk semua nukleus tidak stabil mereput.
Time taken for all the unstable nucleus decay.

B Masa bahan radioaktif mengeluarkan bahan radiasi.
Time taken for the radioactive emit the radiation.

C Masa untuk separuh daripada nukleus radioaktif mereput.
Time taken for half of radioactive nucleus decay.

D Masa untuk separuh daripada jisim bahan radioaktif bertukar menjadi tenaga.
Time taken for half of radioactive mass transform to energy.

38 Apakah yang diperlukan untuk memperlahankan neutron berkelajuan tinggi semasa tindak balas berantai dalam reaktor nuklear?
What is needed to slow down high-speed neutrons during a chain reaction in a nuclear reactor?

A Boron
Boron

B Kadmium
Cadmium

C Grafit
Graphite

D Dinding konrit
Concrete wall

39 Sebuah semikonduktor mengeluarkan elektron apabila disinari satu cahaya biru. Apakah yang berlaku ke atas kesan fotoelektrik tersebut, jika cahaya biru ditukar kepada cahaya ungu?
A semiconductor emits electrons when illuminated by blue light. What happens to the photoelectric effect if the blue light is changed to violet light?

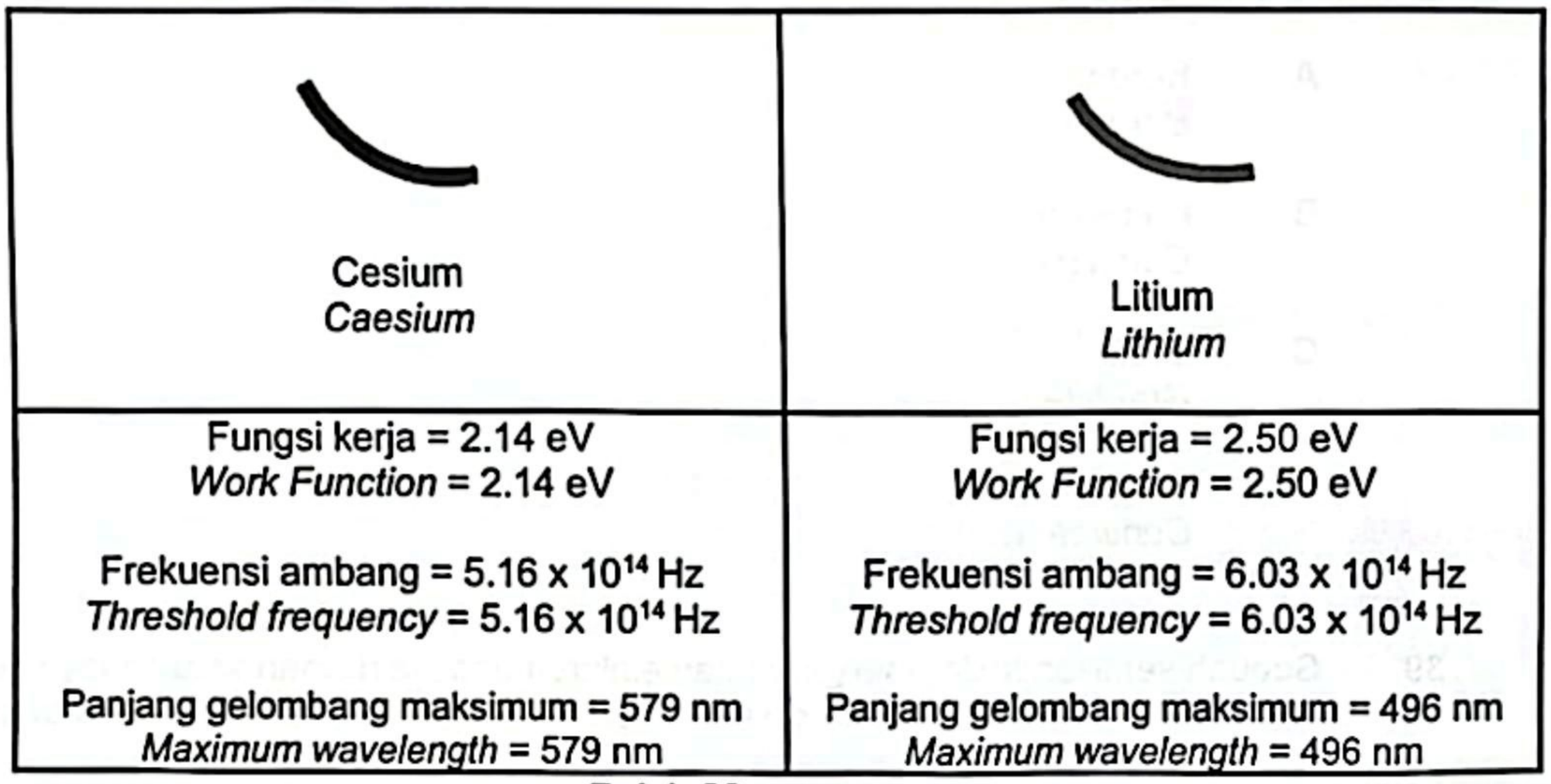
A Bilangan elektron terhasil bertambah.
The number of electrons produced increases.

B Bilangan elektron terhasil berkurang.
The number of electrons produced decreases.

C Tenaga kinetik elektron bertambah.
The kinetic energy of the electron increases.

D Tenaga kinetik elektron berkurang.
The kinetic energy of the electron decreases.

40 Rajah 26 menunjukkan perbandingan dua logam dalam litar sel foto.
Diagram 26 shows a comparison of two metals in a photocell circuit.



Rajah 26
Diagram 26

Antara yang berikut, pernyataan manakah yang **betul**?
*Which of the following statements is **correct**?*

A Semakin bertambah fungsi kerja, semakin bertambah panjang gelombang maksimum.
Work function increase, maximum wavelength increase.

B Semakin bertambah frekuensi ambang, semakin bertambah panjang gelombang maksimum.
Threshold frequency increase, maximum wavelength increase.

C Semakin bertambah fungsi kerja, semakin bertambah frekuensi ambang.
Work function increase, threshold frequency increase.

SOALAN TAMAT
END OF QUESTION