



MAJLIS PENGETUA SEKOLAH MALAYSIA NEGERI SELANGOR

PENILAIAN INTERVENSI TERBILANG AKADEMIK SELANGOR (PINTAS) 2025 FIZIK TINGKATAN 5

Kertas 1

1 jam 15 minit

4531/1

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

Arahan:

1. Kertas peperiksaan ini mengandungi **40** soalan.
*This question paper consists of **40** questions.*
2. Jawab **semua** soalan.
*Answer **all** questions.*
3. Tiap-tiap soalan diikuti oleh **tiga** atau **empat** pilihan jawapan. Pilih satu jawapan yang terbaik bagi setiap soalan dan hitamkan ruangan yang betul pada kertas jawapan objektif.
*Each question is followed by **three** or **four** options. Choose the best option for each question and blacken the correct space on the objective 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 baharu.
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 dilukis mengikut skala kecuali dinyatakan.
The diagrams in the questions provided are not drawn to scale unless stated.
7. Anda dibenarkan menggunakan kalkulator saintifik.
You may use a scientific calculator.
8. Satu senarai formula disediakan di halaman 2 dan 3.
A list of formulae is provided on page 2 and 3.

Kertas peperiksaan ini mengandungi **32** halaman bercetak

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

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 $p = mv$
- 6 $F = ma$

KEGRAVITIAN
GRAVITATION

- 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 $T^2 = \frac{4\pi^2 r^3}{GM}$
- 7 $\frac{T_1^2}{r_1^3} = \frac{T_2^2}{r_2^3}$
- 8 $v = \sqrt{\frac{GM}{r}}$
- 9 $v = \sqrt{\frac{2GM}{r}}$
- 10 $g = 9.81 \text{ m s}^{-2}$
- 11 $G = 6.67 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$

DAYA DAN GERAKAN II
FORCE AND MOTION II

- 1 $F = kx$
- 2 $E_p = \frac{1}{2} Fx = \frac{1}{2} kx^2$

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 $m = \frac{h_i}{h_o} = \frac{v}{u}$

ELEKTRONIK
ELECTRONIC

- 1 $E = eV$
- 2 $E_K = \frac{1}{2} mv^2$
- 3 $\beta = \frac{I_c}{I_B}$

**TEKANAN
PRESSURE**

$$\begin{array}{ll} 1 & P = \frac{F}{A} \\ 2 & P = h\rho g \\ 3 & \rho = \frac{m}{V} \end{array}$$

**ELEKTRIK
ELECTRICITY**

$$\begin{array}{ll} 1 & E = \frac{F}{Q} \\ 2 & I = \frac{Q}{t} \\ 3 & V = \frac{E}{Q} \\ 4 & V = IR \\ 5 & R = \frac{\rho l}{A} \\ 6 & \varepsilon = V + Ir \\ 7 & P = VI \\ 8 & P = \frac{E}{t} \\ 9 & E = \frac{V}{d} \end{array}$$

**ELEKTROMAGNET
ELECTROMAGNETISM**

$$\begin{array}{ll} 1 & \frac{V_s}{V_p} = \frac{N_s}{N_p} \\ 2 & \eta = \frac{P_o}{P_i} \times 100 \% \end{array}$$

**FIZIK NUKLEAR
NUCLEAR PHYSICS**

$$\begin{array}{ll} 1 & n = \left(\frac{1}{2}\right)^n N_0 \\ 2 & E = mc^2 \\ 3 & c = 3.0 \times 10^8 \text{ ms}^{-1} \\ 4 & 1 \text{ u.j.a.} = 1.66 \times 10^{-27} \text{ kg} \end{array}$$

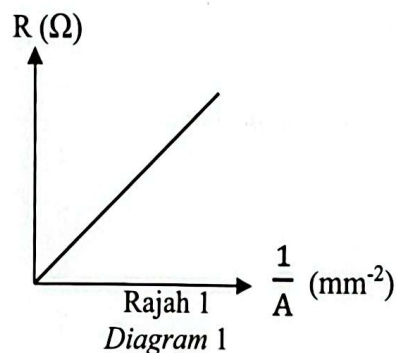
**FIZIK KUANTUM
QUANTUM PHYSICS**

$$\begin{array}{ll} 1 & E = hf \\ 2 & f = \frac{c}{\lambda} \\ 3 & \lambda = \frac{h}{p} \\ 4 & \lambda = \frac{h}{mv} \\ 5 & E = \frac{hc}{\lambda} \\ 6 & p = nhf \\ 7 & hf = W + \frac{1}{2}mv^2 \\ 8 & W = hf_0 \\ 9 & h = 6.63 \times 10^{-34} \text{ Js} \end{array}$$

- 1 Antara berikut, yang manakah merupakan kuantiti vektor?
Which of the following is a vector quantity?

- A Kuasa
Power
- B Tenaga
Energy
- C Tekanan
Pressure
- D Momentum
Momentum

- 2 Rajah 1 menunjukkan graf R melawan $\frac{1}{A}$.
Diagram 1 shows a graph of R against $\frac{1}{A}$.

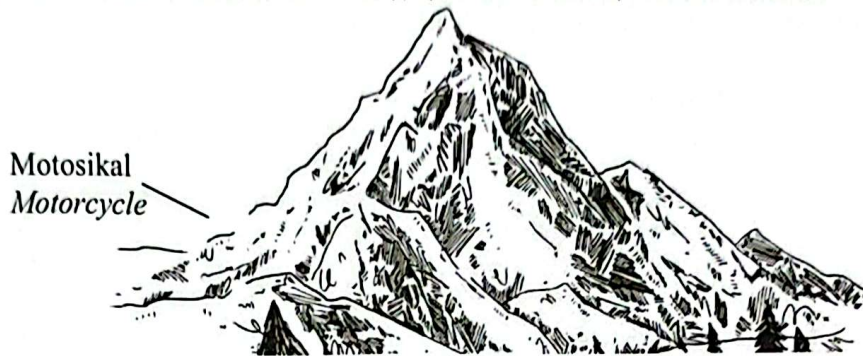


Pernyataan manakah adalah betul?
Which statement is correct?

- A R adalah berkadar terus dengan A.
R directly proportional with A.
- B R adalah berkadar songsang dengan $\frac{1}{A}$.
R is inversely proportional to $\frac{1}{A}$.
- C Unit bagi kecerunan graf adalah $\Omega \text{ mm}^2$.
Unit for the gradient of the graph is $\Omega \text{ mm}^2$.
- D Kecerunan graf = $\frac{\text{perubahan magnitud R}}{\text{perubahan magnitud A}}$.
The gradient of the graph = $\frac{\text{the change of magnitude R}}{\text{the change of magnitude A}}$.

- 3 Rajah 2 menunjukkan seorang penunggang motosikal sedang menaiki sebuah bukit dengan nyahpecutan seragam.

Diagram 2 shows a motorcyclist riding up a hill with uniform deceleration.

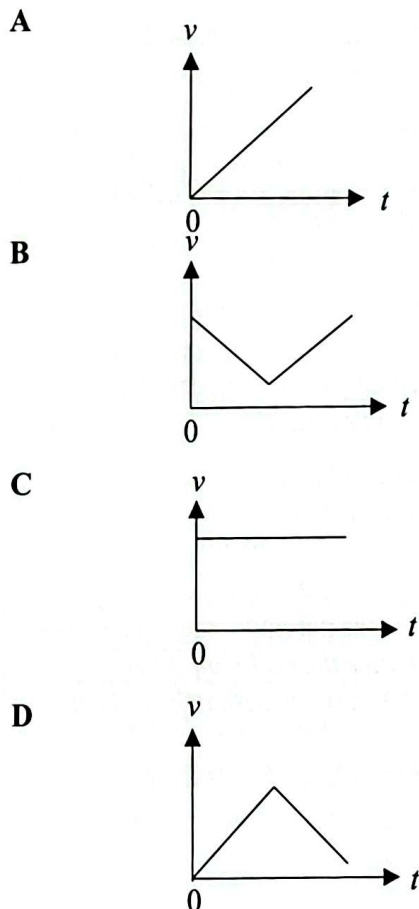


Rajah 2
Diagram 2

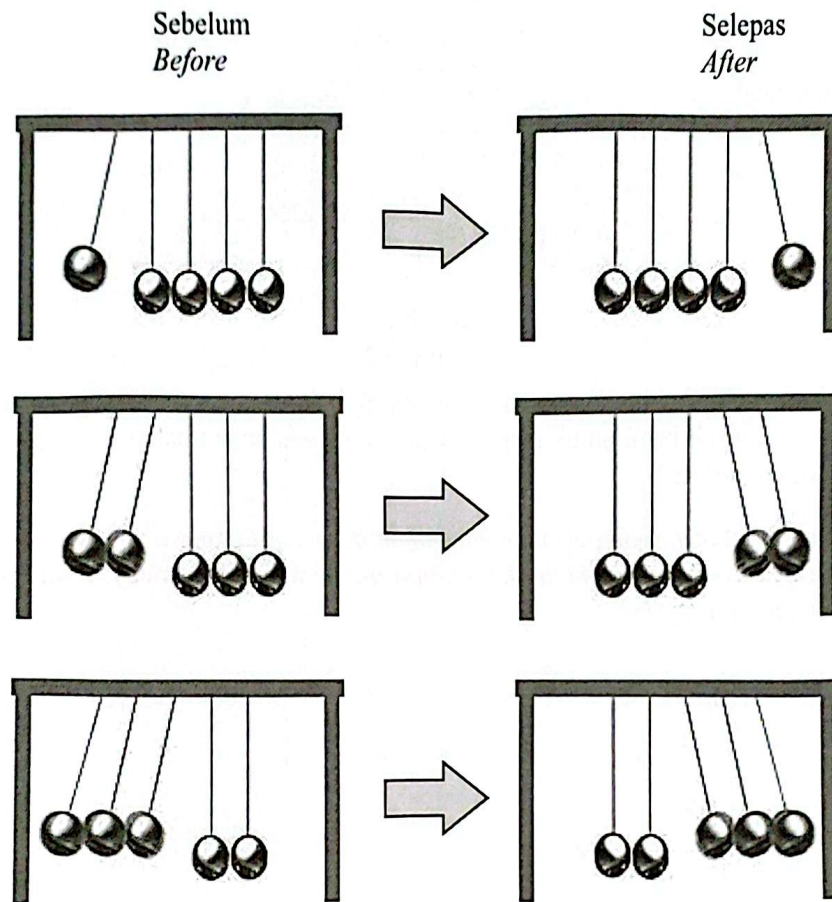
Penunggang motosikal itu kemudiannya menuruni bukit itu dengan pecutan seragam. Graf yang manakah betul untuk menerangkan hubungan antara halaju, v dengan masa, t bagi gerakan motosikal itu?

The motorcyclist then went down the hill with uniform acceleration.

Which graph is correct to explain the relationship between the velocity, v with time, t for the motion of the motorcycle?



- 4 Rajah 3 menunjukkan keadaan buaian Newton setelah beberapa bola pada buaian Newton disesarkan kemudian dilepaskan untuk berlanggar dengan bola lain.
Diagram 3 shows the state of Newton's cradle after several balls on Newton's cradle are displaced and then released to collide with other balls.



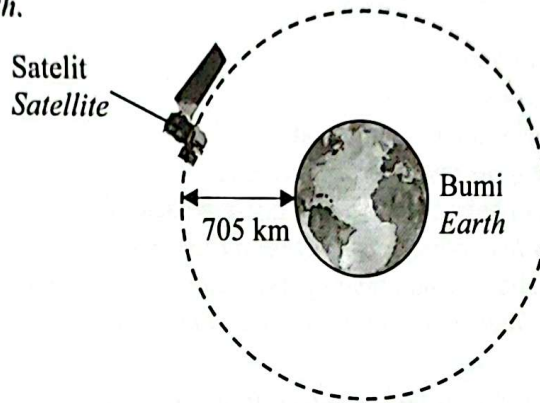
Rajah 3
 Diagram 3

Pernyataan manakah yang **betul** tentang gerakan buaian Newton tersebut?
*Which statement is **correct** about the motion of Newton's cradle?*

- A Jumlah tenaga sebelum dan selepas perlanggaran adalah berbeza
The total energy before and after the collision is different
- B Momentum sebelum dan selepas perlanggaran adalah diabadikan
The momentum before and after collision is conserved
- C Perbezaan jumlah momentum sebelum dan selepas perlanggaran adalah sifar
The difference in total momentum before and after the collision is zero.
- D Jumlah tenaga kinetik sebelum perlanggaran lebih besar berbanding selepas perlanggaran
The total kinetic energy before collision is bigger than after collision

- 5 Rajah 4 menunjukkan sebuah satelit berjisim 2600 kg mengorbit Bumi pada jarak 705 km daripada permukaan Bumi.

Diagram 4 shows a satellite of mass 2600 kg orbiting Earth at a distance 705 km from the surface of Earth.



Rajah 4
Diagram 4

Dengan menggunakan rumus $T^2 = \frac{4\pi^2 r^3}{GM}$, hitung tempoh orbit bagi satelit itu.

[Jisim Bumi = 5.97×10^{24} kg]

[Jejari Bumi = 6.37×10^3 km]

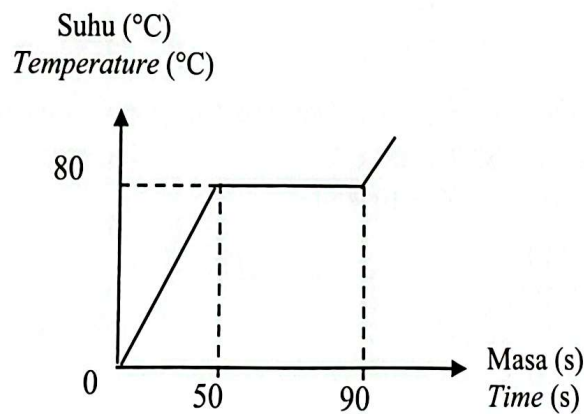
By using formula $T^2 = \frac{4\pi^2 r^3}{GM}$, calculate the orbital period of the satellite.

[Mass of the Earth = 5.97×10^{24} kg]

[Radius of the Earth = 6.37×10^3 km]

- A 5.522×10^3 s
 B 5.925×10^3 s
 C 2.563×10^7 s
 D 3.049×10^7 s
- 6 Antara berikut yang manakah adalah **benar** tentang satelit yang digunakan dalam Sistem Kedudukan Sejagat (GPS)?
- Which of the following is **true** about the satellites that is used in the Global Positioning System (GPS)?*
- A Tempoh orbit ialah 24 jam
Orbital period is 24 hours
 B Mengorbit Bumi dalam arah yang sama dengan arah putaran Bumi
To orbit the Earth in the same direction as the direction of the Earth's rotation
 C Berada dalam orbit yang lebih rendah daripada orbit Bumi geopegun
Located in a lower orbit than the Geostationary Earth Orbit
 D Sentiasa berada di atas kedudukan geografi yang sama di permukaan Bumi
Always above the same geographical location on Earth

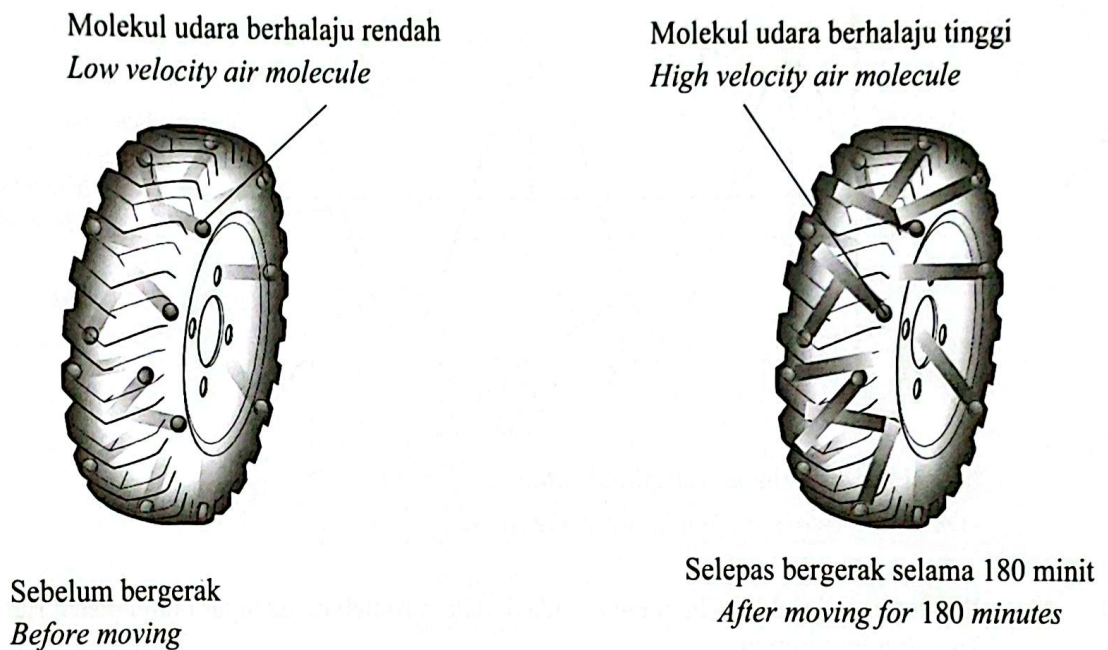
- 7 Semangkuk nasi yang panas dibiarkan pada suhu bilik.
Keseimbangan terma dicapai apabila
*A bowl of hot rice being left at room temperature.
Thermal equilibrium is reached when*
- A suhu nasi berkurang
rice temperature decreases
- B suhu udara persekitaran meningkat
the surrounding air temperature increases
- C tiada pengaliran haba bersih antara udara persekitaran dan nasi
there is no net heat transferred between the surrounding air and rice
- D jumlah tenaga haba dalam udara persekitaran dan nasi adalah sama
the amount of heat energy in the surrounding air and the rice is the same
- 8 Rajah 5 menunjukkan graf suhu-masa bahan P yang berjisim 0.025 kg yang dipanaskan menggunakan pemanas 100 W.
Diagram 5 shows the temperature-time graph of substance P with a mass of 0.025 kg which is heated using 100 W heater.



Berapakah haba pendam tentu pelakuran bagi bahan P?
What is the specific latent heat of fusion of substance P?

- A $1.6 \times 10^5 \text{ J kg}^{-1}$
- B $2.0 \times 10^5 \text{ J kg}^{-1}$
- C $3.2 \times 10^5 \text{ J kg}^{-1}$
- D $3.6 \times 10^5 \text{ J kg}^{-1}$

- 9 Rajah 6 menunjukkan molekul udara dalam sebuah tayar tertutup sebelum dan selepas bergerak di jalanraya selama 180 minit.
 Diagram 6 shows air molecules in a sealed tire before and after travelling on the road for 180 minutes.



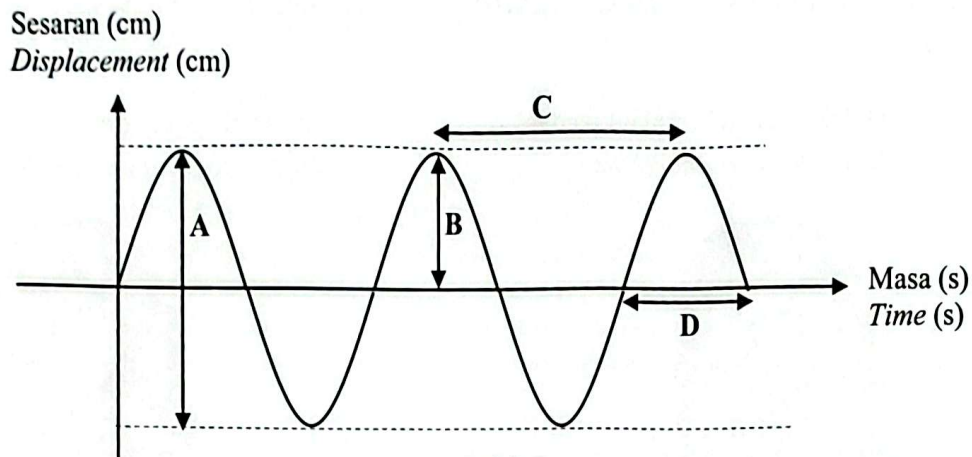
Rajah 6
 Diagram 6

Pasangan manakah yang **betul** selepas tayar tertutup tersebut bergerak di jalanraya selama 180 minit?

Which pair is **correct** after the sealed tire has been travelling on the road for 180 minutes?

	Tenaga kinetik molekul udara <i>Kinetic energy of air molecule</i>	Tekanan udara <i>Air pressure</i>
A	Bertambah <i>Increase</i>	Bertambah <i>Increase</i>
B	Berkurang <i>Decrease</i>	Berkurang <i>Decrease</i>
C	Bertambah <i>Increase</i>	Berkurang <i>Decrease</i>
D	Berkurang <i>Decrease</i>	Bertambah <i>Increase</i>

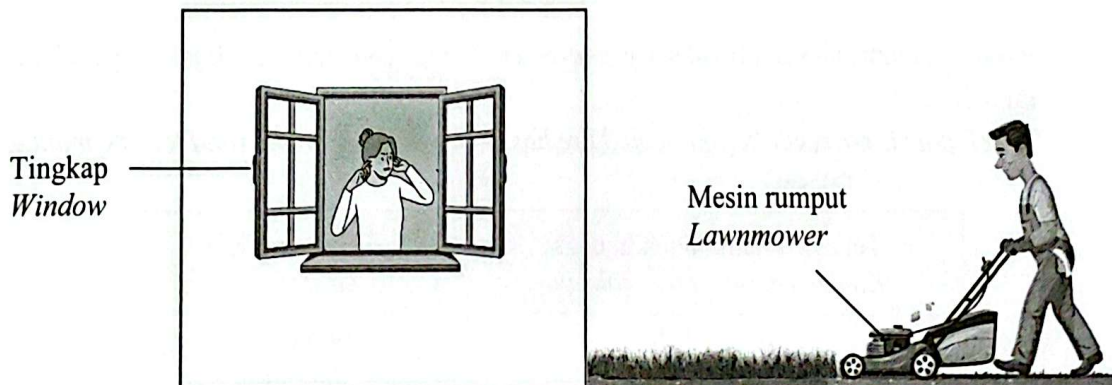
- 10 Rajah 7 menunjukkan graf sesaran-masa bagi gelombang.
Diagram 7 shows a displacement-time graph of a wave.



Rajah 7
Diagram 7

Manakah menunjukkan amplitud gelombang?
Which one shows the amplitude of the wave?

- 11 Rajah 8 menunjukkan ibu yang berada di dalam rumah mendengar bunyi mesin rumput yang kuat dari luar rumah.
Diagram 8 shows a mother who is inside the house hearing the loud noise of a lawnmower from outside the house.

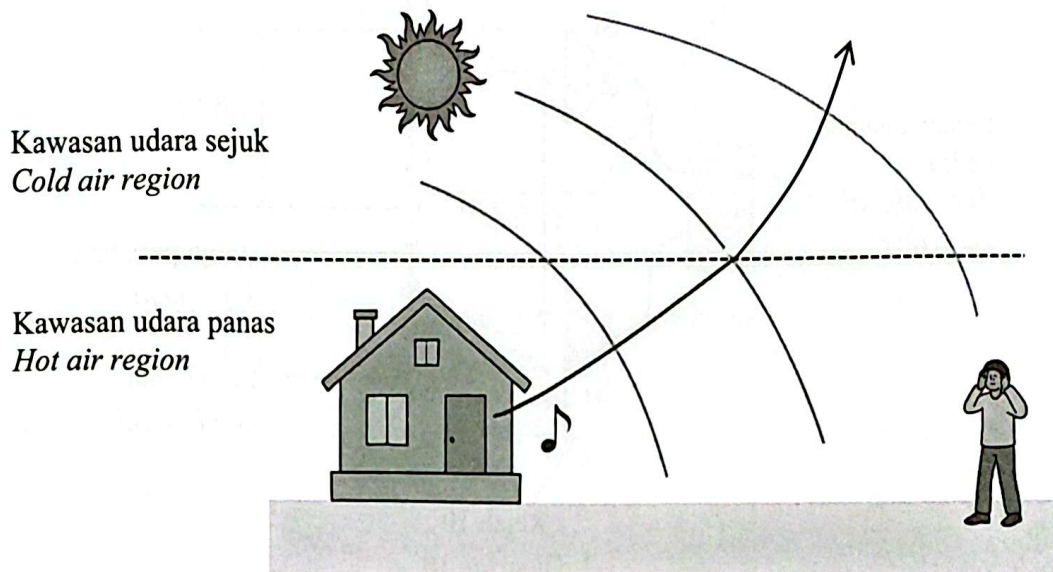


Rajah 8
Diagram 8

Antara berikut yang manakah fenomena yang terlibat?
Which of the following is the phenomenon involved?

- | | |
|--|--|
| A pantulan gelombang
reflection of waves | C pembiasan gelombang
refraction of waves |
| B pembelauan gelombang
diffraction of waves | D interferens gelombang
interference of waves |

- 12 Rajah 9 menunjukkan gelombang bunyi merambat dari udara panas ke udara sejuk pada waktu siang. Bunyi tidak kedengaran dengan jelas pada waktu siang.
Diagram 9 shows a sound wave propagating from hot air to cold air during the day. The sound is not clearly heard during the day.



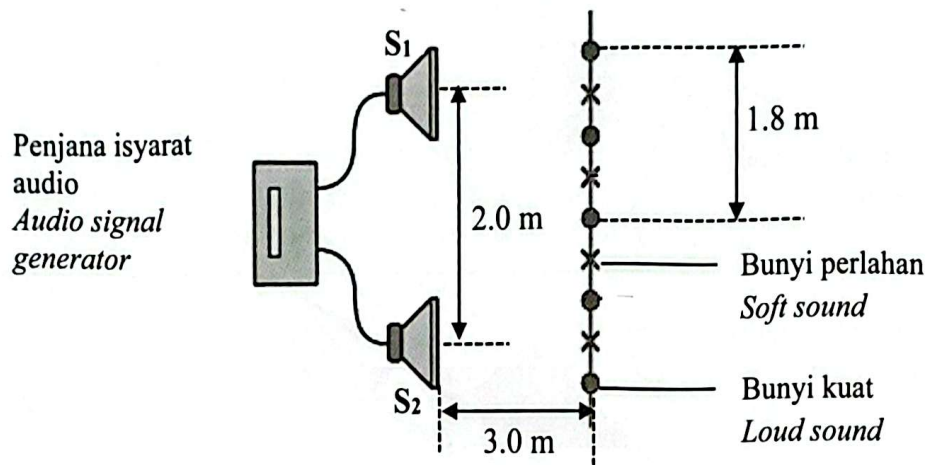
Rajah 9
Diagram 9

Manakah antara berikut akan berlaku apabila gelombang bunyi memasuki kawasan udara sejuk?

Which of the following will occur when the sound wave enters cold air region?

- I Laju gelombang bunyi bertambah
The speed of the sound wave increases
 - II Panjang gelombang berkurang
The wavelength decreases
 - III Arah perambatan gelombang mendekati garisan normal
The direction of wave propagation bends towards the normal line
- A I sahaja
 - B II sahaja
 - C I dan II
 - D II dan III

- 13 Rajah 10 menunjukkan susunan radas dalam eksperimen interferens bunyi. Pemerhati dapat mendengar bunyi kuat dan bunyi perlahan berselang seli. Diagram 10 shows the apparatus setup in a sound interference experiment. The observer can hear loud and soft sounds alternately.



Rajah 10
Diagram 10

Hitung panjang gelombang bunyi yang digunakan
Calculate the wavelength of the sound used.

- A 0.6 m
B 1.0 m
C 1.4 m
D 1.8 m
- 14 Rajah 11 menunjukkan spektrum gelombang elektromagnet.
Diagram 11 shows a spectrum of electromagnetic waves.

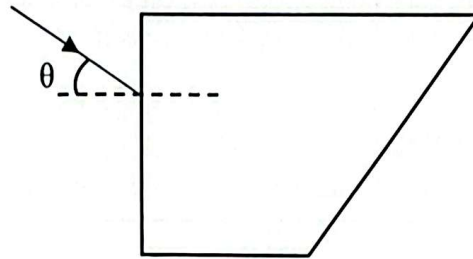
Sinar gama Gamma ray	Sinar-X X-ray	Sinaran ultraungu Ultraviolet	Cahaya nampak Visible light	Sinaran inframerah Infrared	Gelombang mikro Microwave	Gelombang radio Radio wave
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Rajah 11
Diagram 11

Kuantiti fizik manakah semakin bertambah dari sinar gama ke gelombang radio?
Which physical quantity increases from gamma rays to radio waves?

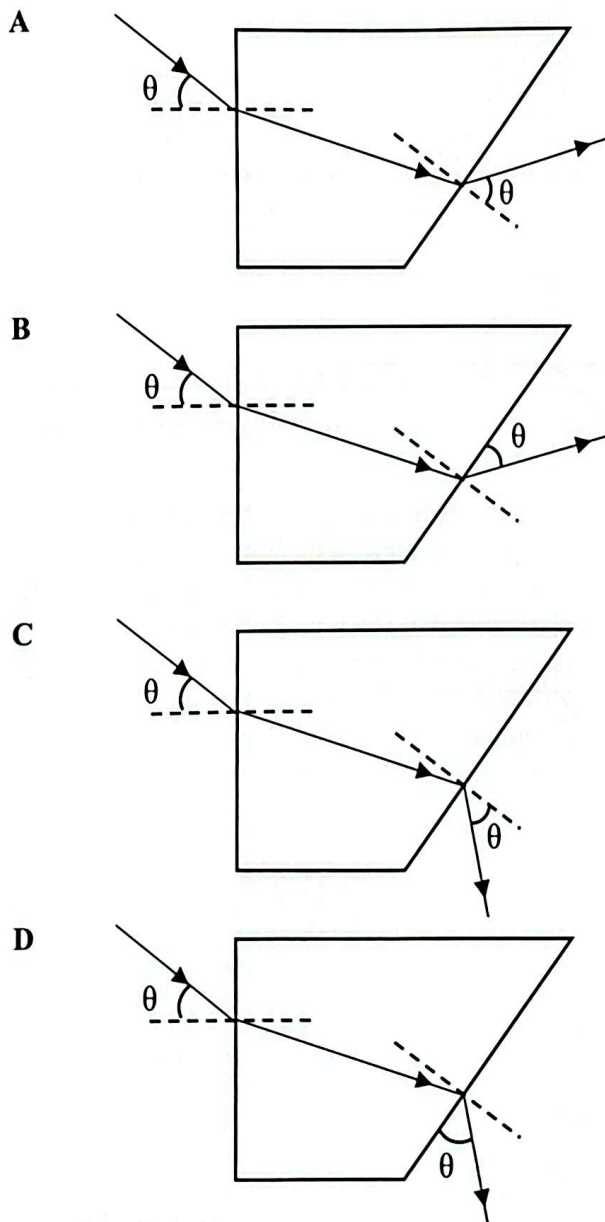
- A Tenaga
Energy
- B Frekuensi
Frequency
- C Laju gelombang
Speed of waves
- D Panjang gelombang
Wavelength

- 15 Rajah 12 menunjukkan satu sinar cahaya merambat dari udara ke blok kaca.
Diagram 12 shows a light ray propagate from air into glass block.

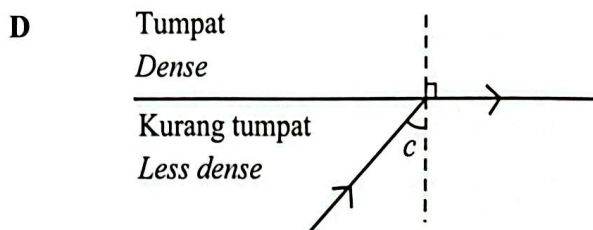
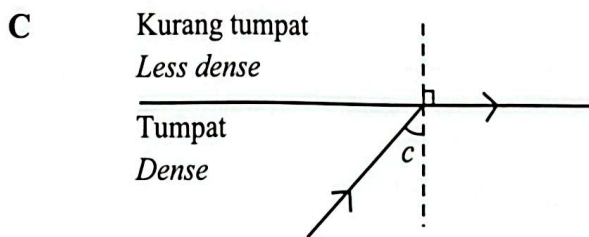
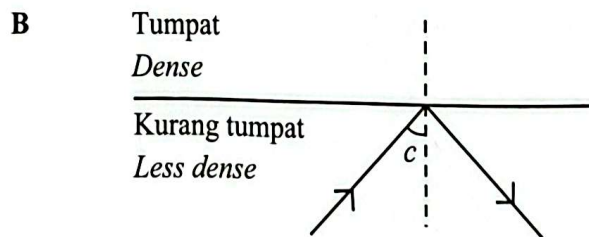
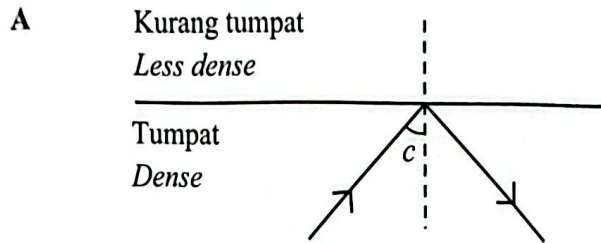


Rajah 12
Diagram 12

Rajah manakah yang menunjukkan lintasan cahaya yang betul?
Which diagram shows the correct path of the ray?

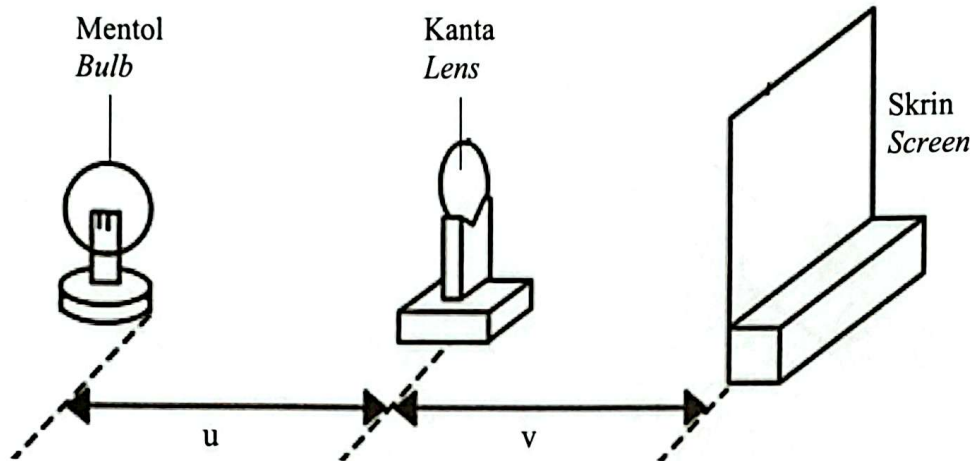


- 16 Rajah manakah A, B, C atau D yang menunjukkan takrifan sudut genting, c dengan betul apabila cahaya merambat melalui dua medium berbeza ketumpatan?
Which diagram A, B, C or D shows the correct definition of a critical angle, c when light propagate through two mediums of different densities?



- 17 Rajah 13 menunjukkan suatu eksperimen bagi mengkaji hubungan antara jarak objek, u , dan jarak imej, v , dan juga untuk menentukan panjang fokus, f . Didapati bahawa apabila mentol digerakkan lebih jauh dari kanta, imej tajam yang terbentuk menjadi lebih kecil.

Diagram 13 shows an experiment to study the relationship between the object distance, u and the image distance, v and then to determine the focal length, f . It is found that when the bulb is moved farther away from the lens, the sharp image formed becomes smaller.



Rajah 13
Diagram 13

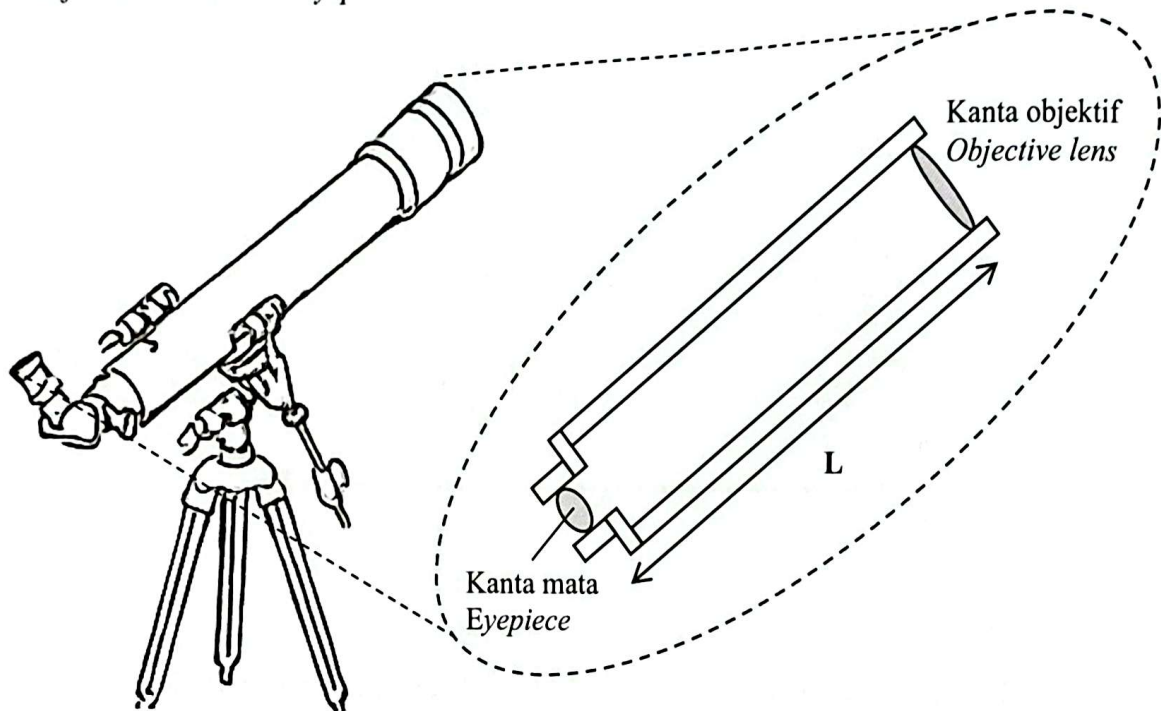
Pilih pernyataan yang paling **tepat** merujuk kepada situasi berikut.

Choose the most appropriate statement referring to the situation.

- A Nilai u bertambah, menyebabkan nilai v berkurang.
The magnitude of u increases, causing the value of v to decrease.
- B Nilai u berkurang, menyebabkan nilai v bertambah.
The magnitude of u value decreases, causing the v value to increase.
- C Nilai f meningkat kerana kanta menghasilkan imej yang lebih kecil.
The magnitude of f increases because the lens produces a smaller image.
- D Nilai v tetap kerana kanta cembung hanya menghasilkan satu jenis imej.
The magnitude of v is fixed because a convex lens produces only one type of image.

- 18 Rajah 14 menunjukkan kanta cembung yang digunakan dalam sebuah teleskop astronomi. Panjang fokus kanta objektif dan kanta mata masing-masing adalah f_o dan f_m , dan L adalah jarak antara kanta objektif dan kanta mata.

Diagram 14 shows a convex lens used in an astronomical telescope. The focal length of the objective lens and the eyepiece are f_o and f_m , respectively, and L is the distance between the objective lens and the eyepiece.



Rajah 14
Diagram 14

Tentukan jarak di antara kanta objektif dan kanta mata bagi menghasilkan imej yang paling jelas.

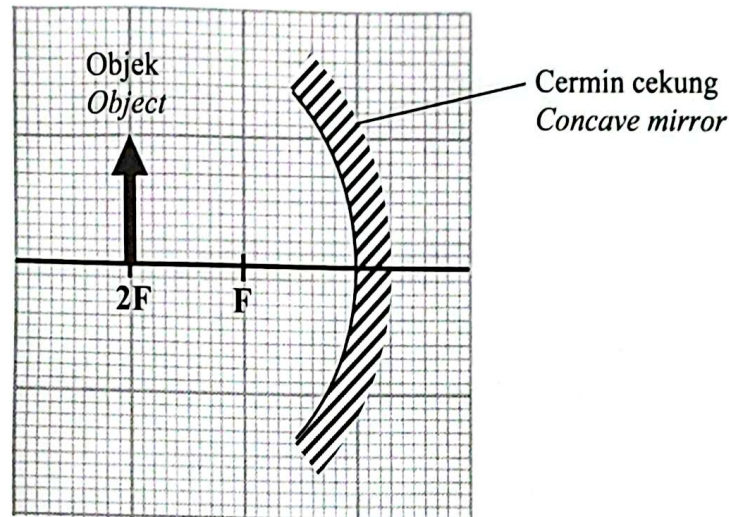
Determine the distance between the objective lens and the eyepiece to produce the clearest image.

- A $L > f_o + f_m$
- B $L < f_o + f_m$
- C $L = f_o + f_m$
- D $L = f_o - f_m$



- 19 Rajah 15 menunjukkan satu objek diletakkan pada jarak $2f$ di hadapan sebuah cermin cekung dimana f ialah panjang fokus.

Diagram 15 shows an object is placed at distance of $2f$ in front of a concave mirror which f is focal length.



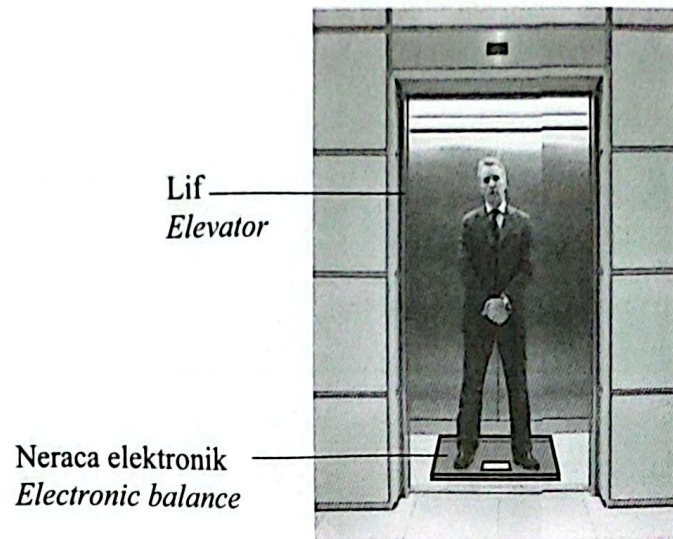
Rajah 15
Diagram 15

Apakah sifat imej yang terbentuk?

What is the characteristics of the image formed?

- A Maya, tegak, lebih besar daripada objek
Virtual, upright, bigger than object
- B Nyata, songsang, sama saiz dengan objek
Real, inverted, same size as the object
- C Nyata, songsang, lebih kecil daripada objek
Real, inverted, smaller than object
- D Nyata, songsang, lebih besar daripada objek
Real, inverted, bigger than object

- 20 Rajah 16 menunjukkan seorang lelaki sedang berdiri di atas sebuah neraca elektronik di dalam sebuah lif.
Diagram 16 shows a man standing on a electronic balance in an elevator.

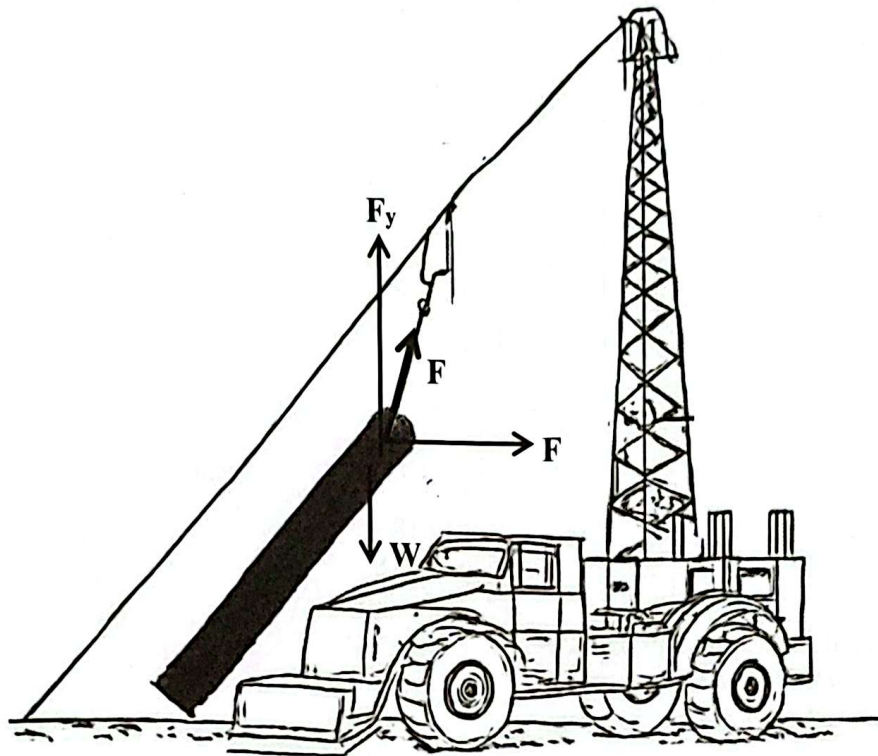


Rajah 16
Diagram 16

Pilih pernyataan yang **betul** apabila lif itu bergerak ke atas dengan halaju seragam.
*Choose the **correct** statement when the elevator is moving up at a uniform velocity.*

- A Bacaan neraca elektronik adalah sifar
The reading of electronic balance is zero
- B Bacaan neraca elektronik tidak berubah
The reading of electronic balance is unchanged
- C Bacaan neraca elektronik itu berkurang
The reading of electronic balance decreases
- D Bacaan neraca elektronik itu bertambah
The reading of electronic balance increases

- 21 Rajah 17 menunjukkan satu daya F dikenakan oleh satu kabel untuk mengangkat kayu balak. Diagram 17 shows a force, F is exerted by a single cable to lift a log.



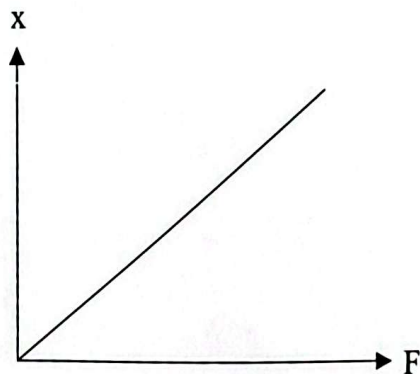
Rajah 17
Diagram 17

Pilihan yang manakah menunjukkan daya paduan menegak bagi situasi di atas.
Which of the following shows the vertical net force of the above situation.

- A $F_x + F$
- B $F - W$
- C $F_y - W$
- D $F_y + F_x$

- 22 Rajah 18 menunjukkan graf hubungan antara pemanjangan spring, x dengan daya, F yang dikenakan pada sebuah spring.

Diagram 18 shows a graph of the relationship between the extension of a spring, x and the force, F applied to a spring.



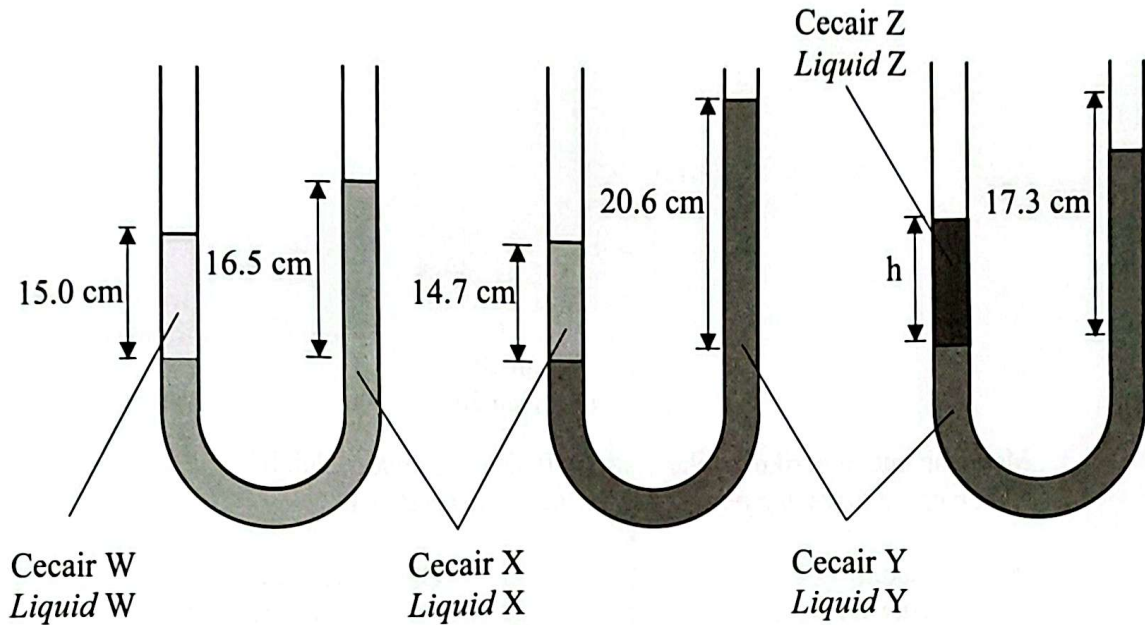
Rajah 18
Diagram 18

Gabungan manakah yang betul?
Which combination is correct?

	Pemboleh ubah bergerak balas <i>Responding variable</i>	Hubungan <i>Relationship</i>
A	x	x berkadar terus dengan F <i>x is directly proportional to F</i>
B	x	x bertambah secara linear dengan F <i>x increases linearly with F</i>
C	F	F berkadar terus dengan x <i>F is directly proportional to x</i>
D	F	F bertambah secara linear dengan x <i>F increases linearly with x</i>

- 23 Rajah 19 menunjukkan tiga batang tiub U yang diisi dengan cecair W, X, Y dan Z. Diberi ketumpatan cecair W ialah 1000 kg m^{-3} dan ketumpatan cecair Z ialah 662.7 kg m^{-3} . Hitung ketinggian, h bagi turus cecair Z.

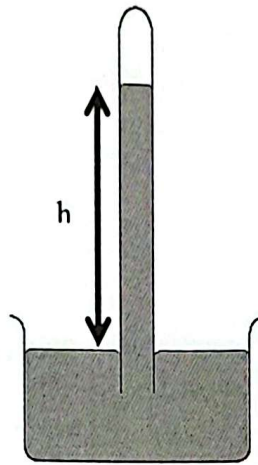
Diagram 19 shows three U-tube filled with liquids W, X, Y and Z. Given that the density of liquid W is 1000 kg m^{-3} and the density of liquid Z is 662.7 kg m^{-3} . Calculate the height, h , of the column in liquid Z.



Rajah 19
Diagram 19

- A 14.9 cm
- B 15.0 cm
- C 16.0 cm
- D 16.9 cm

- 24 Rajah 20 menunjukkan sebuah barometer air ringkas.
Diagram 20 shows a simple water barometer.



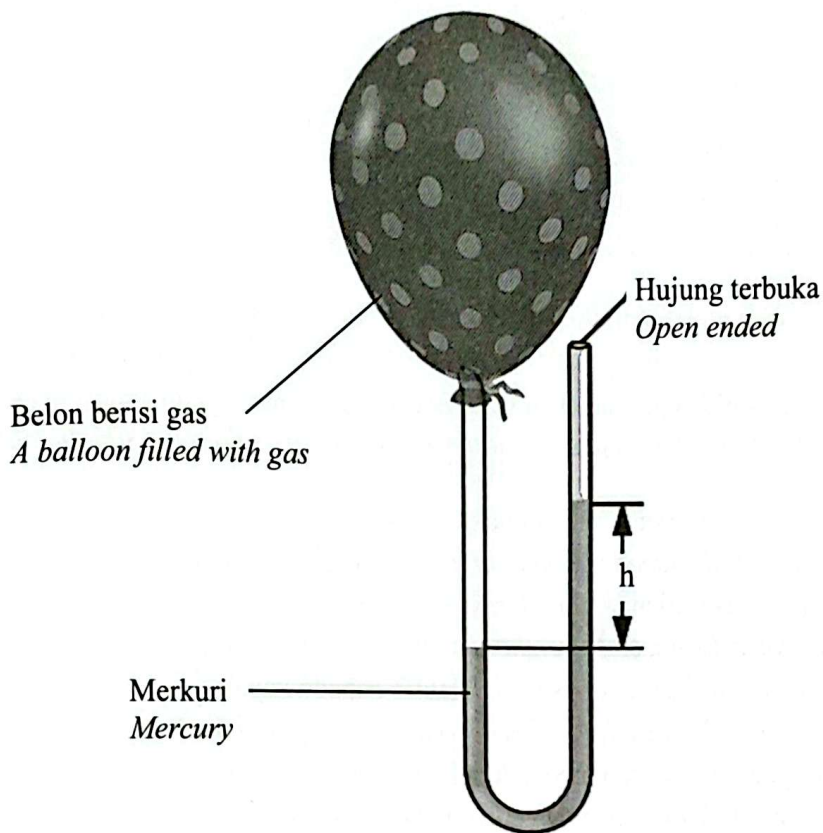
Rajah 20
Diagram 20

Manakah antara berikut adalah kuantiti fizik yang diukur oleh h ?
Which of the following physical quantities measured by h ?

- | | | | |
|---|--------------------------------------|---|--|
| A | vakum
<i>vacuum</i> | C | tekanan gas
<i>gas pressure</i> |
| B | tekanan air
<i>Water pressure</i> | D | tekanan atmosfera
<i>atmospheric pressure</i> |

- 25 Rajah 21 menunjukkan sebuah manometer disambung kepada sebuah belon berisi gas.

Diagram 21 shows a manometer connected to a balloon filled with gas.



Rajah 21
Diagram 21

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

- A Tekanan gas = $h\rho g$
Gas pressure = $h\rho g$
- B Tekanan gas + Tekanan atmosfera = $h\rho g$
Gas pressure + Atmospheric pressure = $h\rho g$
- C Tekanan gas + $h\rho g$ = Tekanan atmosfera
Gas pressure + $h\rho g$ = Atmospheric pressure
- D Tekanan gas = Tekanan atmosfera + $h\rho g$
Gas pressure = Atmospheric pressure + $h\rho g$

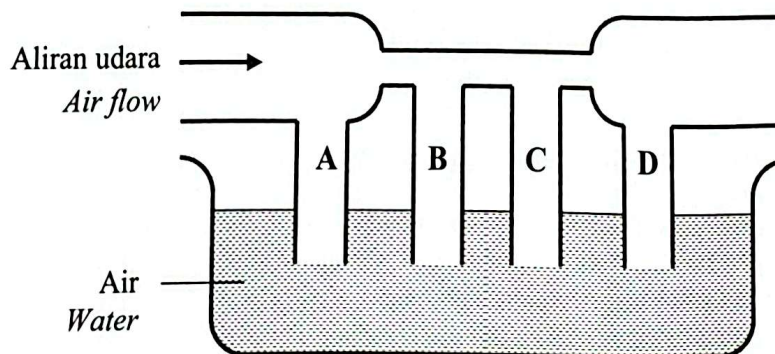
- 26 Rajah 22 menunjukkan seorang lelaki terapung di permukaan air menggunakan sebuah kayak. Diagram 22 shows a man floating on the surface of water using a kayak.



Rajah 22
Diagram 22

Hubungan antara kuantiti fizik manakah yang betul bagi menerangkan situasi di atas?
Which relationship between physical quantities is correct to explain the situation above?

- A Berat air yang disesarkan = berat lelaki + berat kayak
Weight of water displaced = weight of man + weight of kayak
- B Berat air yang disesarkan > berat lelaki + berat kayak
Weight of water displaced > weight of man + weight of kayak
- C Isipadu air yang disesarkan = isipadu lelaki + isipadu kayak
Volume of water displaced = volume of man + volume of kayak
- D Isipadu air yang disesarkan > isipadu lelaki + isipadu kayak
Volume of water displaced > volume of man + volume of kayak
- 27 Rajah 23 menunjukkan aliran air melalui tiub Venturi.
Diagram 23 shows the flow of water through a Venturi tube.



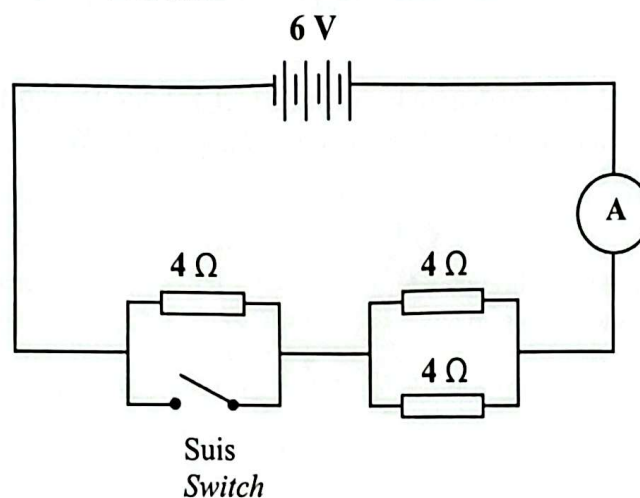
Rajah 23
Diagram 23

Tiub manakah yang mempunyai paras air yang paling rendah?
Which tube has the lowest water level?

28 Antara berikut pernyataan manakah menerangkan tentang beza keupayaan antara dua titik?
Which of the following statements describes the potential difference between two points?

- A Arus 1 A mengalir apabila 1 V dikenakan merentasi dua titik
Current flows is 1 A when 1 V is applied across two points
- B Kuasa dibebaskan di antara dua titik apabila cas 1 C mengalir
Power released between two points when 1 C charge is flow
- C Tenaga dipindahkan di antara dua titik apabila cas 1 C mengalir
Energy transferred between two points when 1 C charge is flow
- D Tenaga dibebaskan di antara dua titik apabila arus 1 A mengalir di antara dua titik
Energy released between two points when 1 A current flow through two points

29 Rajah 24 menunjukkan tiga perintang yang disambung dalam satu litar,
Diagram 24 shows three resistors connected in a circuit.



Rajah 24
Diagram 24

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

- A 0.5 A
- B 0.8 A
- C 1.0 A
- D 3.0 A

- 30 Apakah yang dimaksudkan dengan daya gerak elektrik?
What is meant by electromotive force?
- A Kerja yang dilakukan oleh cas dalam litar
The work done by a charge in a circuit
 - B Kerja yang dilakukan oleh satu coulomb cas dalam litar
The work done by one coulomb of charge in a circuit
 - C Kerja yang dilakukan oleh sumber tenaga untuk menggerakkan cas mengelilingi satu litar lengkap
The work done by a source of energy to move a charge around a complete circuit
 - D Kerja yang dilakukan oleh sumber tenaga untuk menggerakkan satu coulomb cas mengelilingi satu litar lengkap
The work done by a source of energy to move one coulomb of charge in a complete circuit
- 31 Rajah 25 menunjukkan sebuah periuk nasi yang berlabel 240 V, 400 W.
Diagram 25 shows an electric cooker with a label 240 V, 400 W.

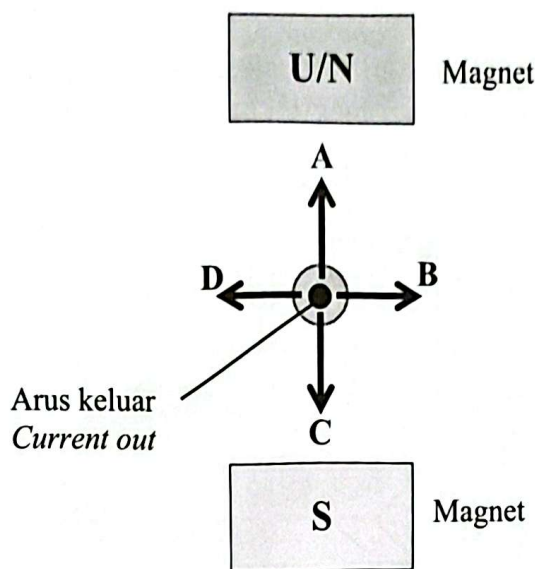


Rajah 25
Diagram 25

Apa yang dimaksudkan dengan 400 W?
What is meant by 400 W?

- A Kadar perubahan kuasa ialah 400 W
The rate of change of power is 400 W
- B Kadar perubahan tenaga ialah 400 W
The rate of change of energy is 400 W
- C Kadar perubahan voltan ialah 400 W
The rate of change of voltage is 400 W
- D Kadar perubahan arus ialah 400 W
The rate of change of current is 400 W

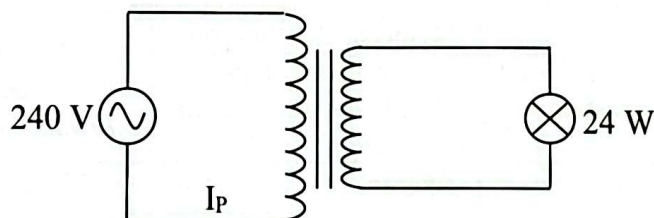
- 32 Rajah 26 menunjukkan satu konduktor pembawa arus diletakkan di antara dua kutub magnet. Diagram 26 shows a current-carrying conductor placed between two magnetic poles.



Rajah 26
Diagram 26

Antara arah A, B, C and D, yang manakah adalah arah gerakan bagi konduktor tersebut?
Which of the directions A, B, C and D, is the direction of motion of the conductor?

- 33 Rajah 27 menunjukkan sebuah transformer unggul digunakan untuk menyalakan satu lampu pada kecerahan normal. Diagram 27 shows an ideal transformer used to light up a bulb at normal brightness.



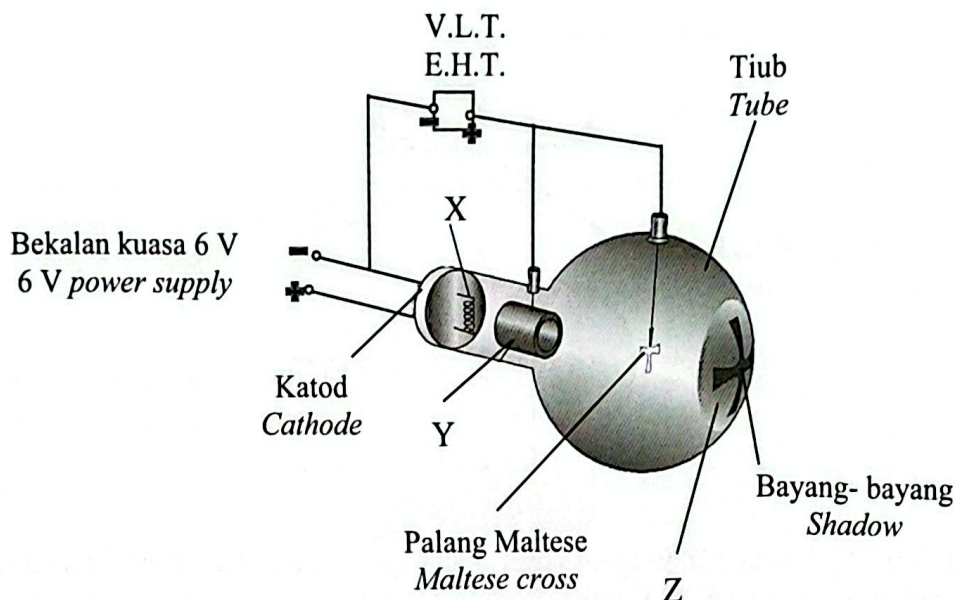
Rajah 27
Diagram 27

Berapakah arus I_p ?
What is the current I_p ?

- A 0.1 A
- B 0.2 A
- C 5.0 A
- D 10.0 A

- 34 Rajah 28 menunjukkan struktur utama sebuah tiub palang Maltese yang dihidupkan dan disambung dengan V.L.T. dan bekalan kuasa 6 V. Apakah fungsi bahagian yang dilabel X, Y dan Z?

Diagram 28 shows the main structure of a Maltese cross tube that switched on and connected to a E.H.T and 6 V power supply. What is the function of the parts labelled X, Y and Z.

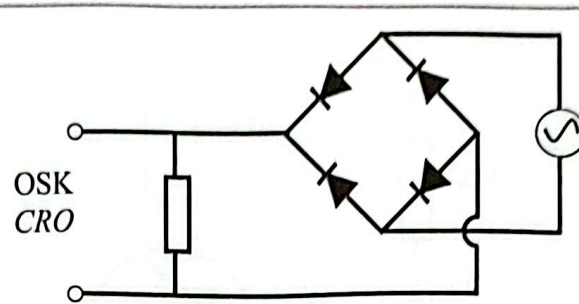


Rajah 28
Diagram 28

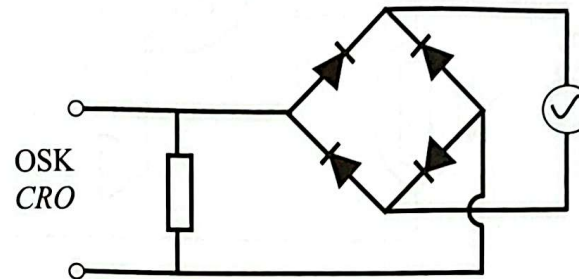
	X	Y	Z
A	Menghasilkan sinar katod <i>Generate cathode rays</i>	Memecut elektron pada kelajuan tinggi <i>Accelerate electrons at high speed</i>	Menghasilkan kesan berpendaflour <i>Produce a fluorescent effect</i>
B	Menjadi panas dan memanaskan katod <i>Becomes hot and heats up cathode</i>	Memfokuskan elektron pada skrin <i>Focusing electrons on a screen</i>	Menukar tenaga kinetik kepada tenaga haba dan cahaya <i>Convert the kinetic energy to heat and light energy</i>
C	Menghasilkan sinar katod <i>Generate cathode rays</i>	Memfokuskan elektron pada skrin <i>Focusing electrons on a screen</i>	Menghasilkan kesan berpendaflour <i>Produce a fluorescent effect</i>
D	Menjadi panas dan memanaskan katod <i>Becomes hot and heats up cathode</i>	Memecut elektron pada kelajuan tinggi <i>Accelerate electrons at high speed</i>	Menukar tenaga kinetik kepada tenaga haba dan tenaga cahaya <i>Convert the kinetic energy to heat and light energy</i>

- 35 Antara berikut, yang manakah menunjukkan susunan litar retifikasi gelombang penuh yang betul?
Which of the following shows the correct arrangement of a full-wave rectification circuit?

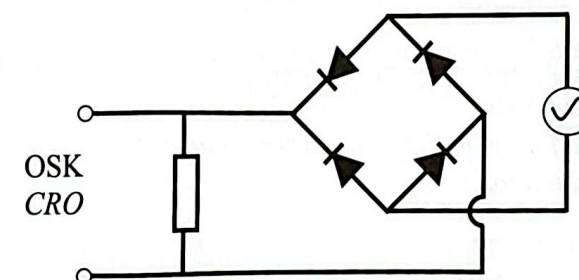
A



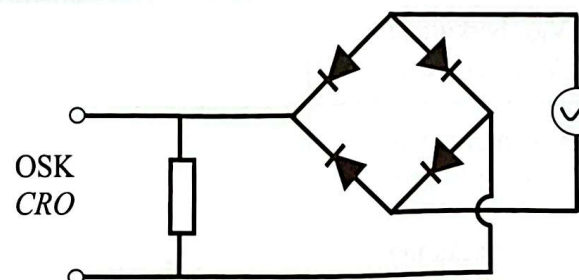
B



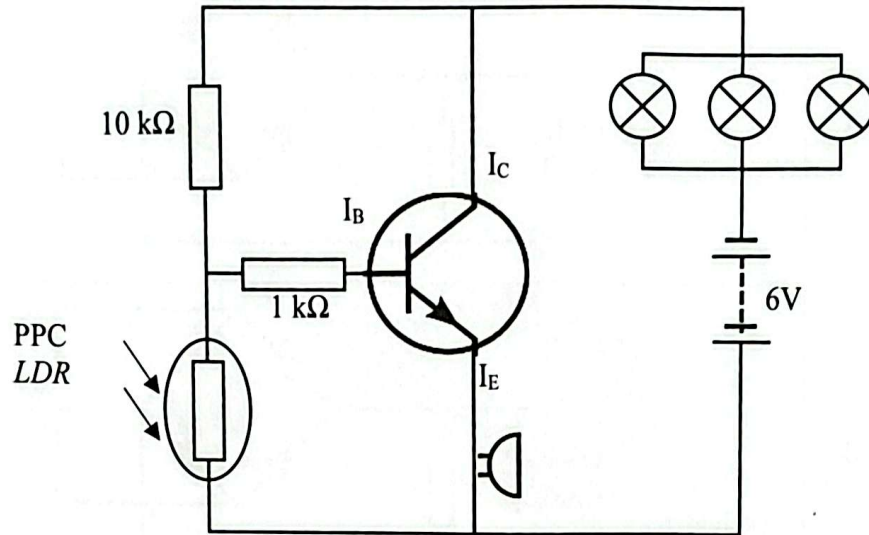
C



D



- 36 Rajah 29 menunjukkan sebuah litar suis kawalan cahaya yang digunakan untuk menghidupkan ketiga-tiga lampu dan penggera secara automatik.
Diagram 29 shows a light control switch circuit used to turn on the three lights and buzzer automatically.



Rajah 29
Diagram 29

Antara berikut, apakah yang berlaku pada nilai V_{PPC} , I_B dan I_C pada waktu siang? Pilih gabungan yang betul.

Which of the following happens to the value of V_{PPC} , I_B and I_C during the day? Choose the correct combination.

	V_{PPC}	I_B	I_C
A	V_{PPC} berkurang V_{PPC} decrease	$I_B > 0$	$I_C > 0$
B	V_{PPC} meningkat V_{PPC} increase	$I_B = 0$	$I_C > 0$
C	V_{PPC} berkurang V_{PPC} decrease	$I_B = 0$	$I_C = 0$
D	V_{PPC} meningkat V_{PPC} increase	$I_B > 0$	$I_C = 0$

- 37 Dalam eksperimen untuk menentukan jangka hayat isotop radioaktif, keputusan berikut diperoleh.

In an experiment to determine the half-life of radioactive isotope, the following results were obtained

Aktiviti / bilangan per minit <i>Activities / numbers per minutes</i>	410	290	200	140	95	69
Masa / minit <i>Time / minutes</i>	0	2	4	6	8	10

Berapakah anggaran separuh hayat isotop tersebut?

What is the approximate half-life of the isotope?

- A 2 minit / minutes
B 4 minit / minutes
C 6 minit / minutes
D 8 minit / minutes
- 38 Antara tindak balas nukleus berikut, yang manakah merupakan contoh pembelahan?
Which of the following nuclear reactions is an example of fission?

- A ${}^2_1\text{H} + {}^2_1\text{H} \rightarrow {}^4_2\text{He} + \text{tenaga}$
B ${}^{14}_7\text{N} + \text{neutron} \rightarrow {}^{15}_7\text{N} + \text{tenaga}$
C ${}^{214}_{94}\text{Pu} \rightarrow {}^{237}_{92}\text{U} + \alpha + \text{tenaga}$
D ${}^{239}_{92}\text{U} \rightarrow {}^{95}_{38}\text{Sr} + {}^{141}_{54}\text{Xe} + 3{}_0^1\text{n} + \text{tenaga}$

- 39 Apakah faktor yang mempengaruhi arus fotoelektrik?
What is the factor that affect the photoelectric current?
- A Suhu logam
Temperature of metal
 - B Frekuensi foton
Frequency of photon
 - C Keamatan foton
Intensity of photon
 - D Fungsi kerja logam
Work function of metal
- 40 Suatu logam yang mempunyai fungsi kerja 3.424×10^{-19} J disinari dengan cahaya yang mempunyai panjang gelombang 3.8×10^{-7} m.
Berapakah tenaga kinetik maksimum fotoelektron yang terpancar?
[Pemalar Planck, $h = 6.63 \times 10^{-34}$ J s, Laju cahaya dalam vakum, $c = 3.0 \times 10^8$ m s⁻¹]
- A metal with a work function of 3.424×10^{-19} J is shone on by a light of wavelength 3.8×10^{-7} m.
What is the maximum kinetic energy of an emitted photoelectron?
[Planck's constant, $h = 6.63 \times 10^{-34}$ J s, speed of light in vacuum, $c = 3.0 \times 10^8$ m s⁻¹]*
- A 1.50×10^{-19} J
 - B 1.81×10^{-19} J
 - C 1.99×10^{-25} J
 - D 2.65×10^{-40} J

KERTAS PEPERIKSAAN TAMAT