

NAMA:

TINGKATAN:

**MODUL PENINGKATAN PRESTASI MURID TINGKATAN 5
TAHUN 2022/2023**

FIZIK

KERTAS 1

SATU JAM LIMA BELAS MINIT

JANGAN BUKA MODUL INI SEHINGGA DIBERITAHU

1. Modul ini adalah dalam dwibahasa.
2. Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris.
3. Anda dikehendaki membaca maklumat di halaman belakang modul soalan ini.

Modul ini mengandungi 40 halaman bercetak

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

DAYA DAN GERAKAN I FORCE AND MOTION I

$$1 \quad v = u + at$$

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

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

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

$$5 \quad \text{Momentum} = mv$$

$$6 \quad F = ma$$

HABA HEAT

$$1 \quad Q = mc\theta$$

$$2 \quad Q = ml$$

$$3 \quad Q = Pt$$

$$4 \quad P_1V_1 = P_2V_2$$

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

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

KEGRAVITIAN GRAVITATION

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

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

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

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

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

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

$$7 \quad \text{Laju linear, } v = \sqrt{\frac{GM}{r}}$$

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

$$9 \quad \text{Laju lepas, } v = \sqrt{\frac{GM}{r}}$$

GELOMBANG WAVES

$$1 \quad v = f\lambda$$

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

CAHAYA DAN OPTIK LIGHT AND OPTICS

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

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

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

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

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

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

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

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 $R = \frac{\rho l}{A}$

KEELEKTROMAGNETAN ELEKTROMAGNETISM

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

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

ELEKTRONIK ELECTRONICS

1 Tenaga keupayaan elektrik, $E = eV$

Electrical potential energy, $E = eV$

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

Maximum kinetic energy, $E = \frac{1}{2}mv^2$

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

FIZIK NUKLEAR NUCLEAR PHYSICS

1 $N = \left(\frac{1}{2}\right)^n N_0$

2 $E = mc^2$

3 $c = 3.0 \times 10^8 \text{ m s}^{-1}$

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

1 a.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 $hf = W + \frac{1}{2}mv^2_{\text{maks}}$

8 $W = hf_0$

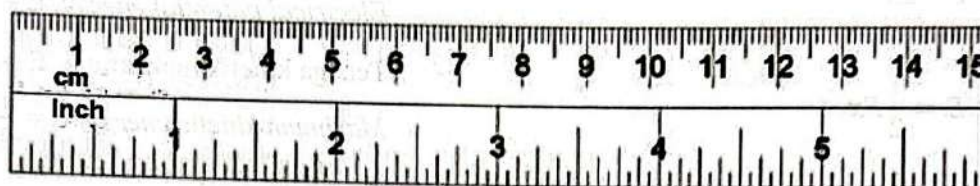
9 $g = 9.81 \text{ m s}^{-2} @ 9.81 \text{ N kg}^{-1}$

10 $G = 6.67 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$

11 $h = 6.63 \times 10^{-34} \text{ J s}$

1 Rajah 1 menunjukkan sebatang pembaris.

Diagram 1 shows a ruler.



Rajah 1

Diagram 1

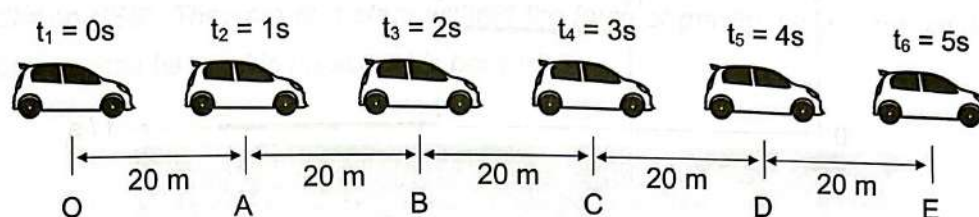
Inci adalah contoh bagi

Inch is an example of

- A unit S.I.
S.I. unit
- B unit metrik
metric unit
- C unit China
Chinese unit
- D unit imperial
imperial unit

- 2 Rajah 2 menunjukkan pergerakan bagi sebuah kereta dari keadaan pegun bagi 5 saat pertama.

Diagram 2 shows movement of a car from stationary for the first 5 seconds.



Rajah 2
Diagram 2

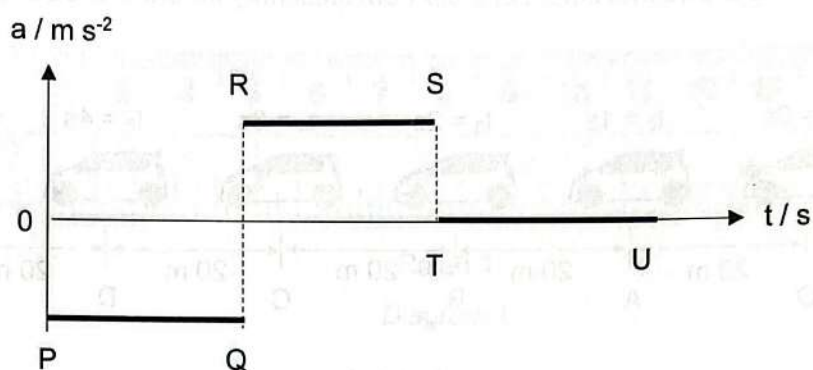
Pernyataan manakah benar bagi menggambarkan pergerakan kereta itu?

Which statement is true to describe the movement of the car?

- A Pecutan OA lebih besar dari pecutan AB
Acceleration OA is greater than acceleration AB
- B Pecutan BC lebih besar dari pecutan CD
Acceleration BC is greater than acceleration CD
- C Halaju AD lebih besar dari halaju DE
Velocity AD is greater than velocity DE
- D Halaju AB lebih besar dari halaju BE
Velocity AB is greater than velocity BE

3. Rajah 3 menunjukkan graf pecutan, a melawan masa, t bagi suatu objek.

Diagram 3 shows the acceleration, a against time, t graph of an object.



Rajah 3

Diagram 3

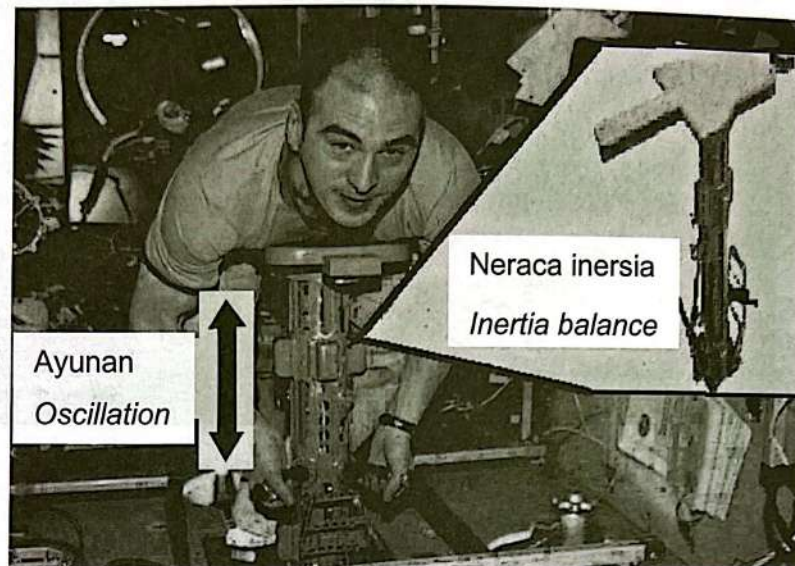
Bahagian graf yang manakah menunjukkan objek bergerak dengan halaju malar?

Which part of the graph shows the object moves with constant velocity?

- A PQ
- B QR
- C RS
- D TU

- 4 Rajah 4 menunjukkan angkasawan yang berada dalam kapal angkasa di Stesen Angkasa Antarabangsa (ISS). Mereka berada dalam keadaan tanpa daya graviti. Hanya neraca inersia khas dapat digunakan untuk mengukur jisim badannya.

Diagram 4 shows the astronaut who was in the spacecraft at The International Space Station (ISS). They are in a state without the force of gravity. Only a special inertia balance can be used to measure his body mass.



Rajah 4

Diagram 4

Apakah kuantiti fizik yang boleh digunakan untuk menentukan jisim angkasawan itu?

What is the physical quantity can be used to determine the mass of the astronaut?

- A Bilangan ayunan
Number of oscillations
- B Tempoh ayunan
Period of oscillation
- C Amplitud ayunan
Amplitude of oscillation
- D Sesaran ayunan
Displacement of oscillation

- 5 Rajah 5 menunjukkan sebuah hoverkraf membawa pelancong meronda di satu kawasan paya. Hoverkraf itu bergerak dengan laju yang tinggi.

Diagram 5 shows a hovercraft carrying tourists roaming around a swamp area. The hovercraft moves with a high speed.



Rajah 5

Diagram 5

Pergerakan hoverkraf dapat diterangkan oleh

The hovercraft movement can be explained by

- A** Prinsip Keabadian Momentum
Principle of Conservation of Momentum
- B** Prinsip Keabadian Tenaga
Principle of Conservation of Energy
- C** Hukum Gerakan Newton Pertama
Newton's First Law of Motion
- D** Hukum Gerakan Newton Kedua
Newton's Second Law of Motion

- 6 Rajah 6 menunjukkan seorang atlet perenang menekan satu blok pelepas untuk memulakan perlumbaan bagi meningkatkan perubahan momentum.
 Diagram 6 shows a swimming athlete pressing a starting block to start a race to increase the change of momentum.



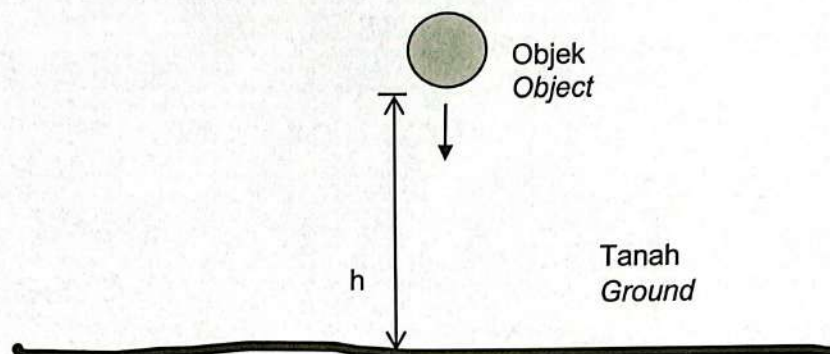
Rajah 6
 Diagram 6

Perubahan momentum adalah
 The change of momentum is

- A daya impuls
 impulsive force
- B impuls
 impulse
- C tekanan
 pressure
- D kuasa
 power

- 7 Rajah 7 menunjukkan satu objek berjisim 2 kg dilepaskan dari ketinggian, h . Objek itu jatuh dengan pecutan, a .

Diagram 7 shows an object of mass 2 kg is released from a height, h . The object falls with acceleration, a .



Rajah 7
Diagram 7

Berapakah pecutan jika objek itu diganti dengan satu objek lain yang berjisim 4 kg?
What is the acceleration if the object is replaced with another object of mass 4 kg?

- A $4a$
- B $2a$
- C a
- D $\frac{a}{2}$

8 Baca pernyataan di bawah.

Read the statement below.

Kuasa dua tempoh orbit planet adalah berkadar terus dengan kuasa tiga jejari orbitnya.

The square of the orbital period of any planet is directly proportional to the cube of the radius of its orbit.

Pernyataan itu berkaitan

The statement is about

A Hukum Kepler Pertama

Kepler's First Law

B Hukum Kepler Kedua

Kepler's Second Law

C Hukum Kepler Ketiga

Kepler's Third Law

9 Bumi dan Zuhrah mengorbit mengelilingi Matahari. Berapakah tempoh orbit Zuhrah?

[Jejari orbit Bumi, $r = 1.50 \times 10^{11}$ m, tempoh orbit Bumi, $T_e = 365$ hari, jejari orbit Zuhrah, $r_v = 1.08 \times 10^{11}$ m]

The Earth and Venus orbit around the Sun. What is the orbital period of Venus?

[Radius of orbit of the Earth, $r = 1.50 \times 10^{11}$ m, period of orbit of the Earth, $T_e = 365$ days, radius of orbit of Venus, $r_v = 1.08 \times 10^{11}$ m]

A 323 hari

323 days

B 322 hari

322 days

C 223 hari

223 days

D 213 hari

213 days

- 10 Keseimbangan terma berlaku apabila
Thermal equilibrium occurs when

- A tiada pemindahan haba berlaku antara dua objek bersentuhan terma.
no heat is transferred between two objects in thermal contact.
- B pemindahan haba bersih antara dua objek bersentuhan terma adalah sifar.
the net heat transfer between two objects in thermal contact is zero.
- C pemindahan haba bersih antara dua objek bersentuhan terma adalah sama.
the net heat transfer between two objects in thermal contact is equal.
- D pemindahan haba bersih antara dua objek bersentuhan terma adalah minimum.
the net heat transfer between two objects in thermal contact is minimum.

- 11 Suatu bahan api menghasilkan 4 kJ tenaga bagi setiap 0.002 kg pembakarannya. Jika bahan api ini digunakan untuk memanaskan suatu cecair berjisim 5 kg dari suhu 40 °C hingga 90 °C, berapakah jisim bahan api yang diperlukan?

(Muatan haba tentu cecair = $5.0 \times 10^3 \text{ J kg}^{-1} \text{ }^\circ\text{C}^{-1}$)

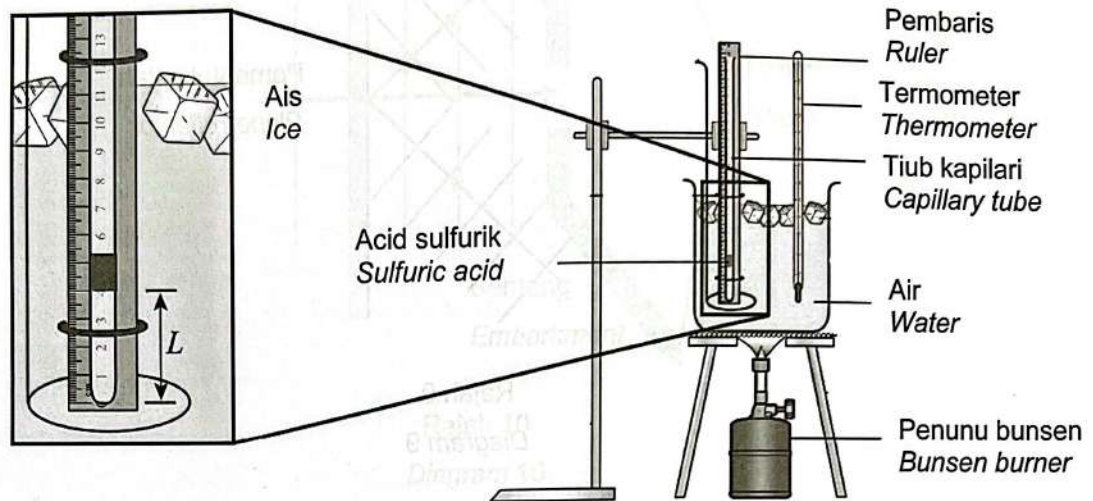
A fuel produced 4 kJ of energy for every 0.002 kg of its combustion. If this fuel is used to heat a liquid of mass 5 kg with a temperature 40 °C to 90 °C, what is the mass of fuel required?

(Specific heat capacity of liquid = $5.0 \times 10^3 \text{ J kg}^{-1} \text{ }^\circ\text{C}^{-1}$)

- A 0.375 kg
 B 0.450 kg
 C 0.625 kg
 D 0.865 kg

- 12 Rajah 8 menunjukkan susunan radas untuk mentahkikan Hukum Charles. Apakah kegunaan turus asid sulfurik dalam tiub kapilari?

Diagram 8 shows the arrangement of the apparatus to verify Charles' Law. What is the function of sulfuric acid column in the capillary tube?



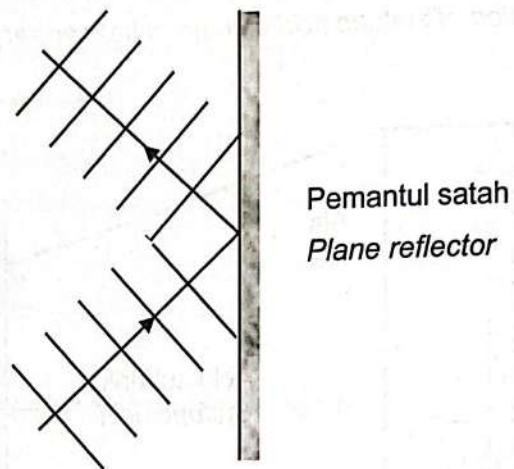
Rajah 8

Diagram 8

- A Menahan tekanan udara.
Withstand air pressure.
- B Petunjuk perubahan tekanan udara.
Indicator of changes in air pressure.
- C Mengelakkan udara terbebas ke persekitaran.
To avoid the air lost to the surrounding.
- D Petunjuk perubahan isipadu udara terperangkap.
Indicator of changes in volume of air trapped.

- 13 Rajah 9 menunjukkan pantulan sejenis gelombang.

Diagram 9 shows reflection of a wave.



Rajah 9
Diagram 9

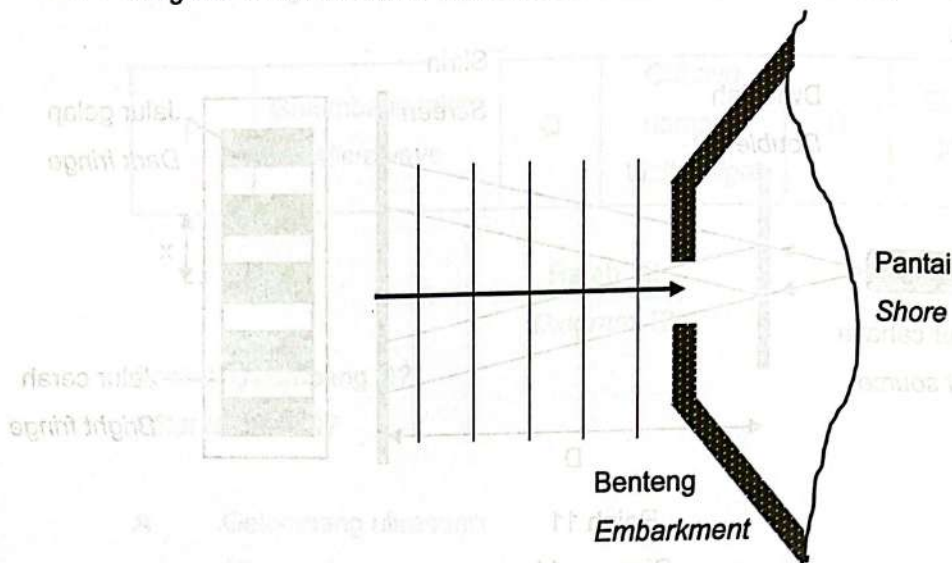
Pernyataan manakah benar tentang ciri-ciri gelombang pantulan?

Which statement is correct about the characteristics of reflected waves?

- A Amplitud gelombang bertambah
Amplitude of the wave increases
- B Frekuensi gelombang berkurang
Frequency of the wave decreases
- C Panjang gelombang tidak berubah
Wavelength does not change
- D Halaju gelombang tidak berubah
Velocity of the wave does not change

14. Rajah 10 menunjukkan gelombang air bergerak mendekati suatu benteng.

Diagram 10 shows water wave moves towards an embarkment.



Rajah 10

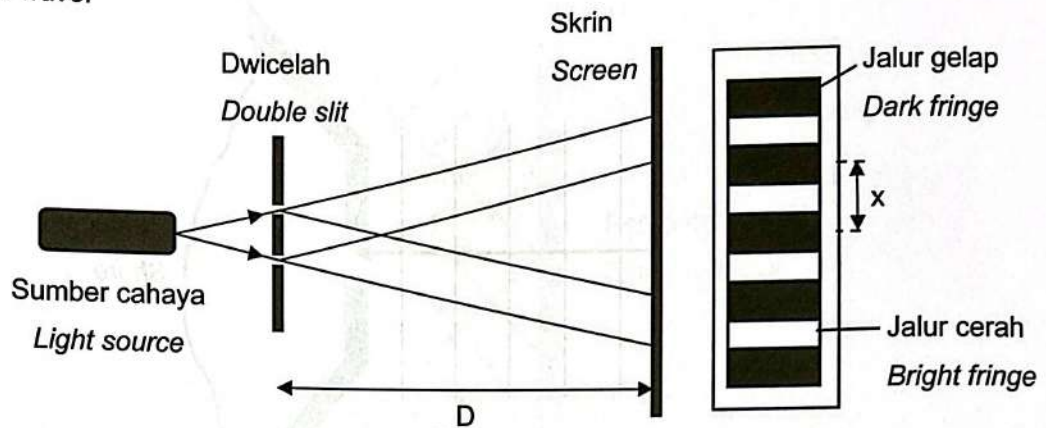
Diagram 10

Ciri-ciri gelombang manakah berubah apabila gelombang air merambat melalui celah benteng itu?

Which characteristics of wave change when water wave propagate through the gap of embarkment?

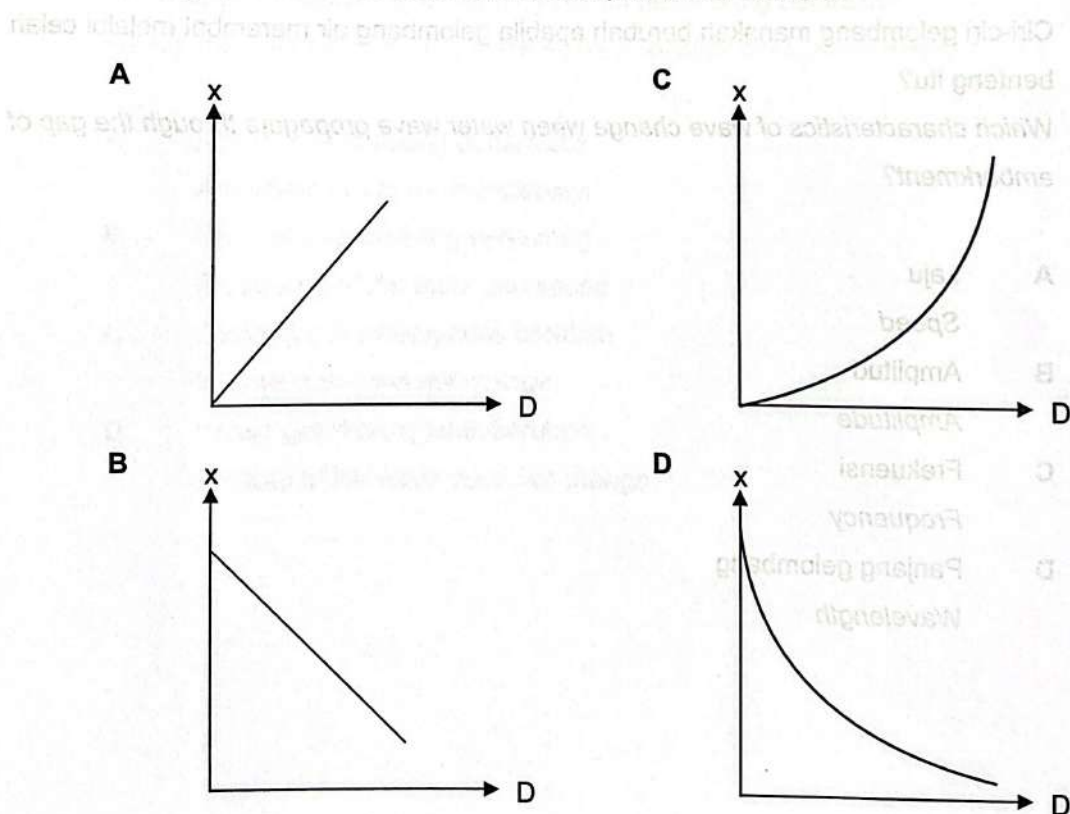
- A Laju
Speed
- B Amplitud
Amplitude
- C Frekuensi
Frequency
- D Panjang gelombang
Wavelength

- 15 Rajah 11 menunjukkan susunan radas untuk mengkaji interferens gelombang cahaya.
 Diagram 11 shows the arrangement of an apparatus to investigate the interference light wave.



Rajah 11
 Diagram 11

Graf manakah yang menunjukkan hubungan yang betul antara D dan x ?
 Which graph shows the correct relationship between D and x ?



16 Rajah 12 menunjukkan spektrum elektromagnet.

Diagram 12 shows an electromagnetic spectrum.

P	Gelombang mikro Microwave	Q	Cahaya nampak Visible light	R	Sinar-X X-ray	S
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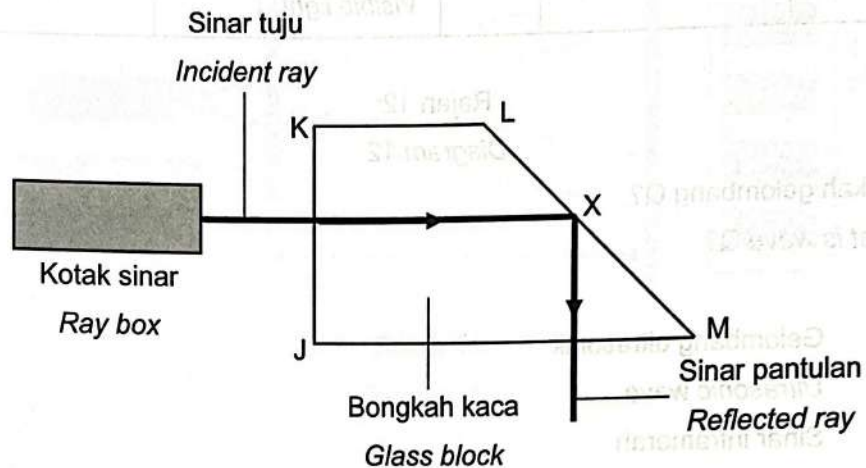
Rajah 12
Diagram 12

Apakah gelombang Q?

What is wave Q?

- A Gelombang ultrasonik
Ultrasonic wave
- B Sinar inframerah
Infrared ray
- C Sinar ultraungu
Ultraviolet ray
- D Sinar gama
Gamma ray

- 17 Rajah 13 menunjukkan satu sinar merambat dalam satu bongkah kaca JKLM. Pantulan dalam penuh berlaku di X. Diagram 13 shows a ray of light propagates in a glass block JKLM. Total internal reflection occurs at X.



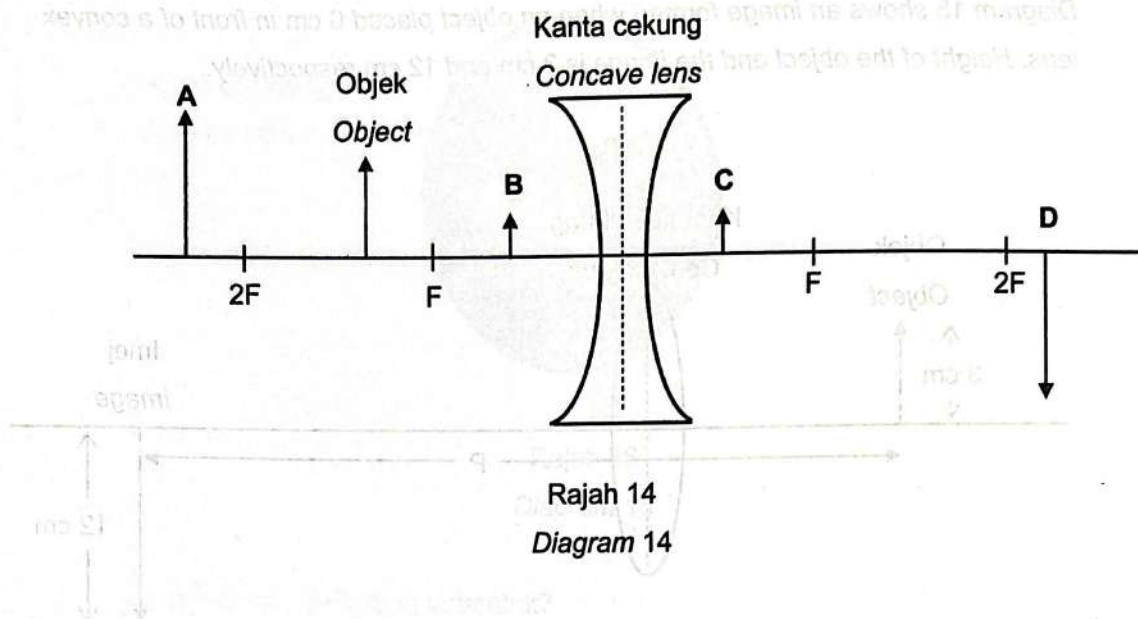
Rajah 13
Diagram 13

Apakah syarat untuk berlakunya pantulan dalam penuh?
What is the condition for total internal reflection occur?

- A Sudut tuju > sudut biasan
Incident angle > refracted angle
- B Sudut biasan > sudut tuju
Refracted angle > incident angle
- C Sudut tuju > sudut genting
Incident angle > critical angle
- D Sudut biasan > sudut genting
Refracted angle > critical angle

18 Rajah 14 menunjukkan satu objek diletakkan di hadapan kanta cekung.

Diagram 14 shows an object placed in front of a concave lens.



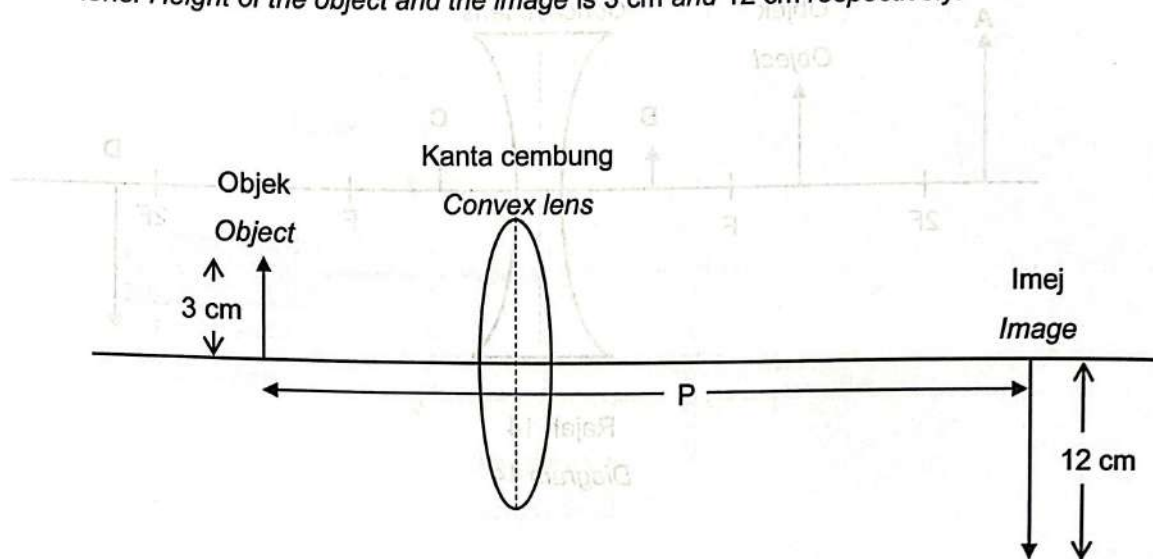
Kedudukan manakah imej terbentuk?

Which position the image is formed?

- A - 30 cm
- B - 24 cm
- C - 12 cm
- D - 10 cm

- 19 Rajah 15 menunjukkan kedudukan imej terbentuk apabila objek diletakkan 6 cm di hadapan kanta cembung. Ketinggian objek dan imej masing-masing ialah 3 cm dan 12 cm.

Diagram 15 shows an image formed when an object placed 6 cm in front of a convex lens. Height of the object and the image is 3 cm and 12 cm respectively.



Rajah 15

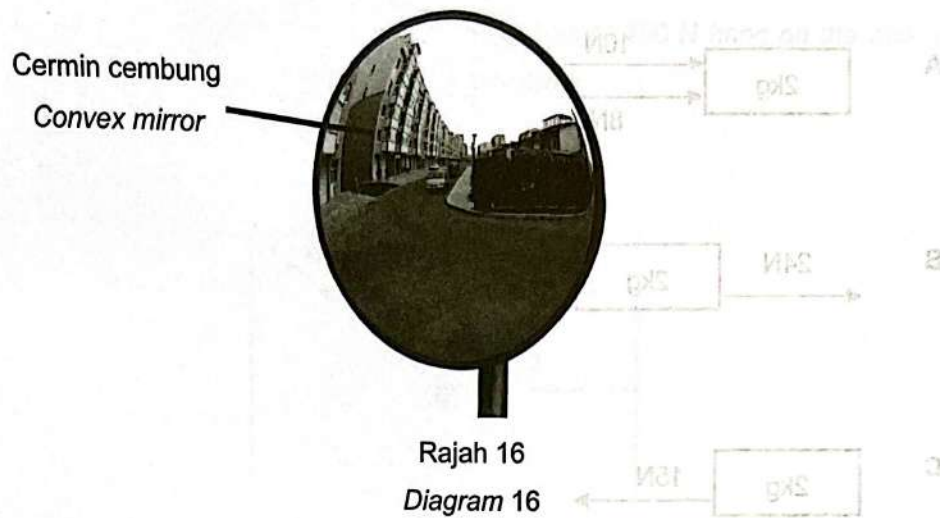
Diagram 15

Berapakah jarak antara objek dan imej, P?

What is distance between object and image, P?

- A 30 cm
- B 24 cm
- C 12 cm
- D 10 cm

- 20 Rajah 16 menunjukkan sebuah cermin cembung digunakan pada suatu selekoh tajam.
Diagram 16 shows a convex mirror applied on a sharp corner.

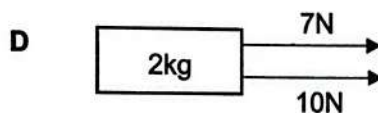
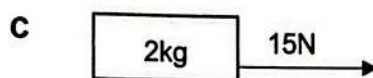
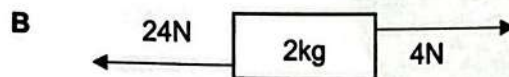
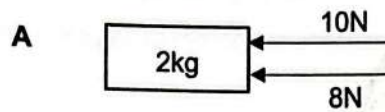


Apakah ciri-ciri imej yang terbentuk?
What are the characteristics of image formed?

- A Maya, songsang dan dibesarkan
Virtual, inverted and magnified
- B Nyata, tegak dan dibesarkan
Real, upright and magnified
- C Nyata, tegak dan dkecilkan
Real, upright and diminished
- D Maya, tegak dan dkecilkan
Virtual, upright and diminished

21 Manakah antara berikut mempunyai pecutan yang terbesar?

Which of the following has the largest acceleration?

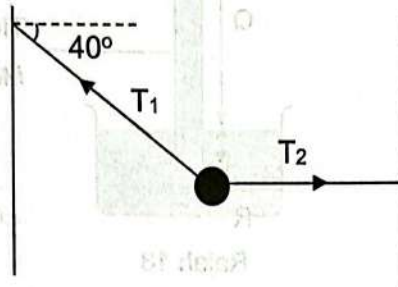


- 22 Rajah 17 menunjukkan sebuah objek pegun dengan berat 150 N digantung pada dinding dengan dua tali yang mempunyai tegangan T_1 dan T_2 .

Hitung T_1 .

Diagram 17 shows a stationary object with weight 150 N hang on the wall with two ropes possessing tension T_1 and T_2 respectively.

Calculate T_1 .



Rajah 17

Diagram 17

- A 114.91 N
- B 130.90 N
- C 195.81 N
- D 233.36 N

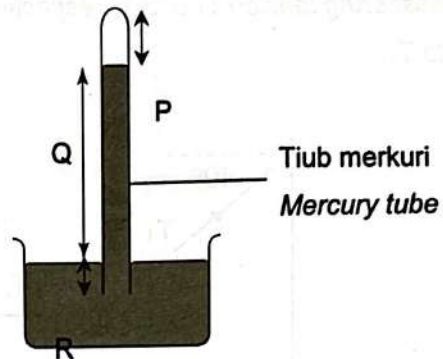
- 23 Faktor manakah **TIDAK** mempengaruhi kekerasan suatu spring?

Which factor does **NOT** affect the stiffness of the spring?

- A Panjang spring
Length of spring
- B Diameter spring
Diameter of spring
- C Ketebalan spring
Thickness of springs
- D Kedudukan spring
Position of spring

- 24 Rajah 18 menunjukkan sebuah barometer merkuri untuk mengukur tekanan atmosfera.

Diagram 18 shows a mercury barometer to measure the atmospheric measure.



Rajah 18

Diagram 18

Tekanan atmosfera diwakili oleh

Atmospheric pressure is represented by

- A P
- B Q
- C $P + Q$
- D $Q + R$

25. Apabila gas yang terperangkap di dalam suatu silinder dimampatkan, kuantiti fizik manakah akan berubah?

When the trapped gas in a cylinder is compressed, which physical quantities will change?

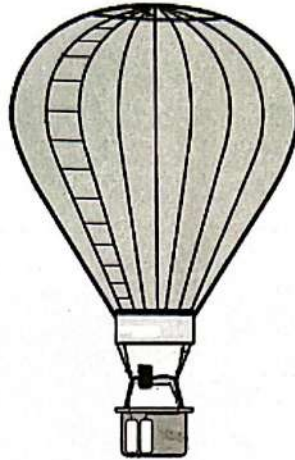
- I Tenaga kinetik
 Kinetic energy
- II Jisim
 Mass
- III Tekanan
 Pressure
- IV Ketumpatan
 Density

- A I dan II sahaja
 I and II only
- B I dan III sahaja
 I and III only
- C II dan IV sahaja
 II and IV only
- D III dan IV sahaja
 III and IV only



- 26 Rajah 19 menunjukkan sebuah belon udara panas terapung pada ketinggian yang tetap.

Diagram 19 shows a hot air balloon floating at constant height.



Rajah 19
Diagram 19

Pernyataan manakah yang benar?

Which statement is true?

- A Daya apungan = berat belon
Buoyant force = weight of balloon
- B Daya apungan < berat belon
Buoyant force < weight of balloon
- C Daya apungan > berat belon
Buoyant force > weight of balloon

- 27 Rajah 20 menunjukkan seorang wanita sedang meniup udara dalam ruang di antara dua belon. Dia mendapati kedua-dua belon itu bergerak mendekati antara satu sama lain.

Diagram 20 shows a woman is blowing air in the space between two balloons. She found that the balloon moving closer to each other.



Belon
Balloon

Rajah 20

Diagram 20

Apakah prinsip yang terlibat dalam situasi di atas?

What is the principle involved in the above situation?

- A Prinsip Pascal
Pascal's principle
- B Prinsip Bernoulli
Bernoulli's principle
- C Prinsip Archimedes
Archimedes' principle
- D Prinsip Keabadian Momentum
Principle of Conservation of Momentum

28 Beza keupayaan, V di antara dua titik dalam suatu medan elektrik ialah

Potential difference, V between two points in an electric field is

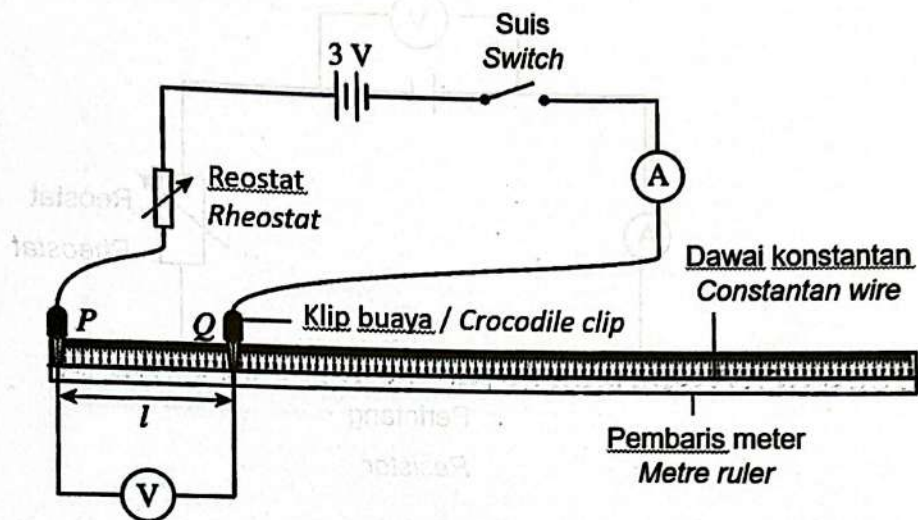
- A kerja yang dilakukan untuk menggerakkan satu coulomb cas di antara dua titik tersebut.
work done to move one coulomb of charge between two points.
- B kerja yang dilakukan untuk menggerakkan satu unit cas di antara dua titik tersebut.
work done to move one unit of charge between two points.
- C kerja yang dilakukan untuk menggerakkan satu coulomb cas dalam satu litar lengkap.
work done to move one coulomb of charge in a complete circuit.
- D kerja yang dilakukan untuk menggerakkan satu unit cas dalam satu litar lengkap.
work done to move one unit of charge in a complete circuit.

29 Rajah 21 menunjukkan susunan radas yang digunakan untuk mengkaji hubungan antara panjang dawai dengan rintangan dawai.

Hasil eksperimen didapati nilai rintangan adalah rendah.

Diagram 21 shows the arrangement of the apparatus used to study the relationship between length of wire and resistance of wire.

The experimental results found that the resistance value was low.



Rajah 21

Diagram 21

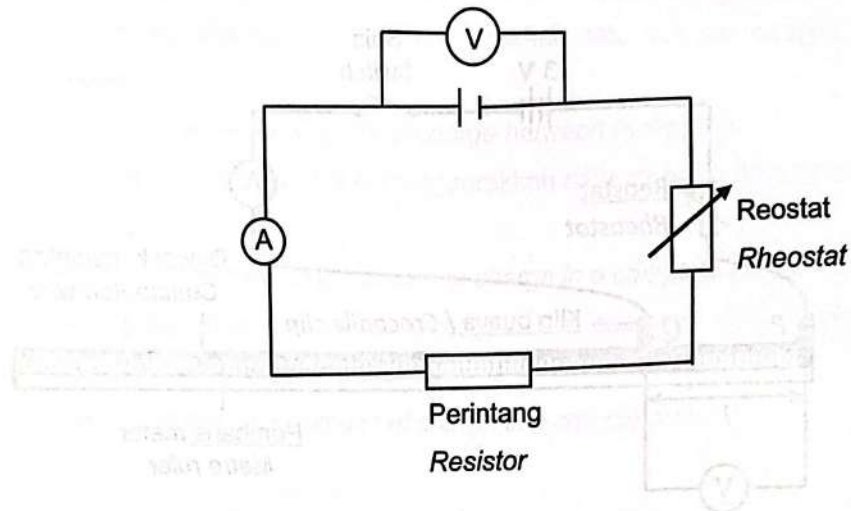
Pernyataan yang manakah benar mengenai eksperimen di atas?

Which statement is true about the above experiment?

	Panjang dawai Length of wire	Beza keupayaan Potential difference
A	panjang long	rendah low
B	panjang long	tinggi high
C	pendek short	tinggi high
D	pendek short	rendah low

- 30 Rajah 22 menunjukkan litar yang boleh digunakan untuk menentukan daya gerak elektrik (d.g.e.), $\mathcal{E}$ dan rintangan dalam, r suatu sel kering.

Diagram 22 shows a circuit that can be used to determine the electromotive force (e.m.f.), $\mathcal{E}$ and internal resistance, r of a dry cell.



Rajah 22

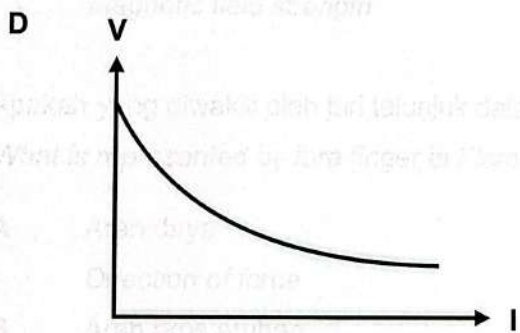
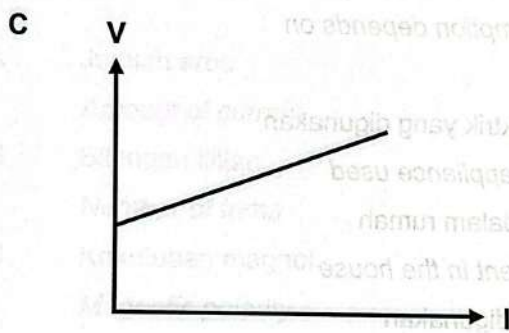
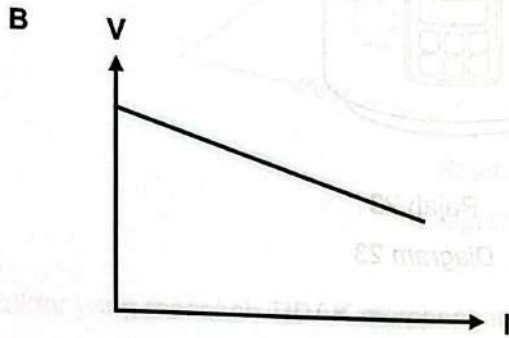
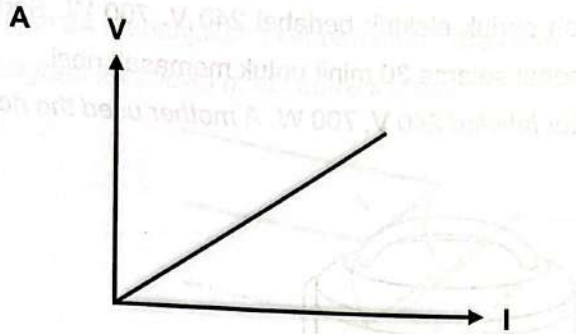
Diagram 22

Manakah antara graf beza keupayaan, V melawan arus, I yang berikut digunakan untuk menentukan nilai $\mathcal{E}$ dan r sel kering tersebut?

Which of the following potential difference, V against current, I graph is used to determine the values of $\mathcal{E}$ and r of the dry cell?

A	long	low
B	long	high
C	short	high
D	short	low

Diagram 23 shows a line graph labeled 240 V 700 W. A motor used the rice cooker for 20 minutes in each morning.



- 31 Rajah 23 menunjukkan sebuah periuk elektrik berlabel 240 V, 700 W. Seorang ibu menggunakan periuk nasi tersebut selama 30 minit untuk memasak nasi.

Diagram 23 shows a rice cooker labeled 240 V, 700 W. A mother used the rice cooker for 30 minutes to cook rice.



Rajah 23

Diagram 23

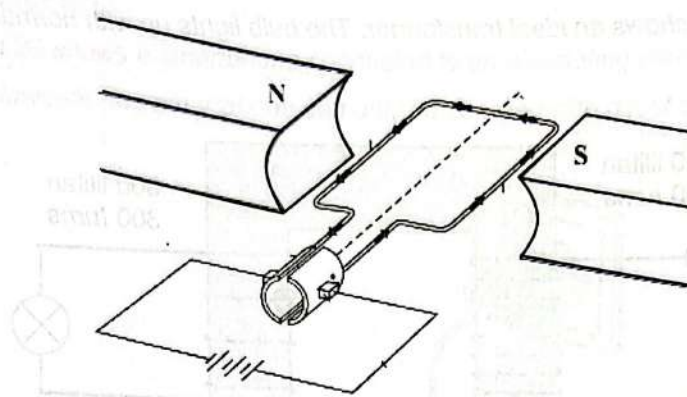
Kos penggunaan tenaga elektrik bergantung kepada

The cost of electrical energy consumption depends on

- A jenama setiap peralatan elektrik yang digunakan
the brand of each electrical appliance used
- B jumlah peralatan elektrik di dalam rumah
number of electrical equipment in the house
- C jumlah tenaga elektrik yang digunakan
the amount of electrical energy consumed
- D saiz peralatan elektrik
size of electrical appliance

- 32 Rajah 24 menunjukkan sebuah motor arus terus.

Diagram 24 shows direct current motor.



Rajah 24

Diagram 24

Faktor yang manakah **TIDAK** mempengaruhi laju putaran gegelung?

Which factor does **NOT** affect rotation speed of the coil?

- | | | | |
|----------|-------------------------|-------|---|
| A | Jumlah arus | | |
| | Amount of current | | |
| B | Bilangan lilitan | | |
| | Number of turns | A 1.0 | A |
| C | Kekutuban magnet | A 2.0 | B |
| | Magnetic polarity | A 3.0 | C |
| D | Kekuatan medan magnet | A 4.0 | D |
| | Magnetic field strength | | |

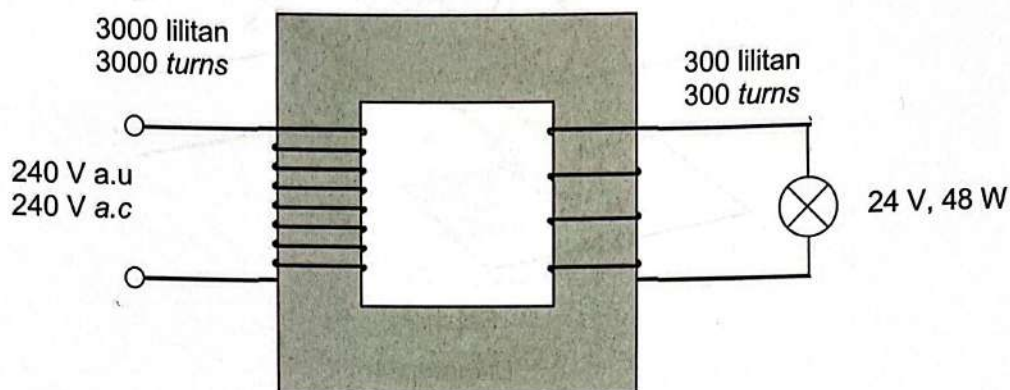
- 33 Apakah yang diwakili oleh jari telunjuk dalam petua tangan kanan Fleming?

What is represented by fore finger in Fleming's right-hand rule?

- | | |
|----------|------------------------------|
| A | Arah daya |
| | Direction of force |
| B | Arah arus aruhan |
| | Direction of induced current |
| C | Arah gerakan dawai |
| | Direction of motion of wire |
| D | Arah medan magnet |
| | Direction of magnetic field |

- 34 Rajah 25 menunjukkan sebuah transformer unggul. Mentol menyala dengan kecerahan normal.

Diagram 25 shows an ideal transformer. The bulb lights up with normal brightness.



Rajah 25

Diagram 25

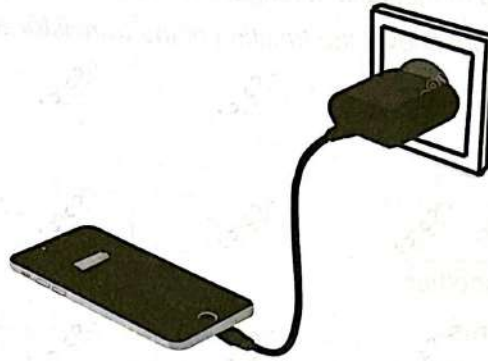
Berapakah nilai arus yang mengalir dalam gegelung primer?

What is the current flow in the primary coil?

- A 0.1 A
- B 0.2 A
- C 0.5 A
- D 10.0 A

- 35 Rajah 26 menunjukkan sebuah telefon pintar yang disambungkan kepada bekalan kuasa arus ulang-alik di rumah. Namun begitu, telefon pintar itu hanya dapat dicas dengan arus terus.

Diagram 26 shows a smartphone connected to an alternating current power supply at home. However, the smartphone can only be charged with direct current.



Rajah 26
Diagram 26

Peranti yang digunakan dalam telefon pintar itu supaya ia dapat dicas ialah
The device used in the smartphone so that it can be charged is

- A diod semikonduktor
semiconductor diode
- B transformer
transformer
- C kapasitor
capasitor
- D transistor
transistor

36

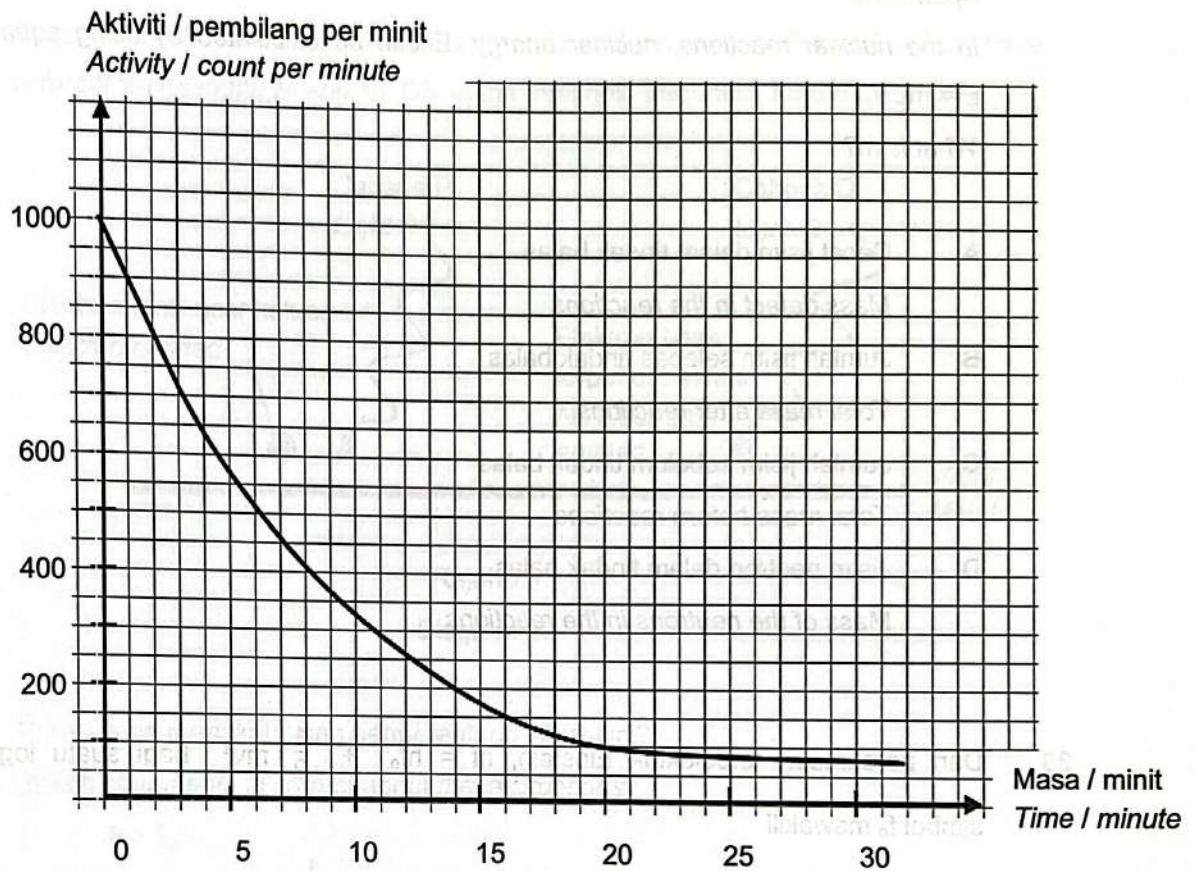
Pertambahan arus tapak, I_B yang kecil akan menghasilkan perubahan yang besar dalam arus pengumpul, I_C
A small increase in the base current, I_B will cause a big change in the collector current, I_C .

Pernyataan di atas menunjukkan fungsi transistor sebagai

The above statement shows the function of the transistor as

- A rektifier
rectifier
- B perata arus
current smoother
- C amplifier arus
current amplifier
- D pembahagi voltan
voltage divider

- 37 Rajah 27 menunjukkan graf pereputan satu sampel radioaktif.
Diagram 27 shows a graph of radioactive decay sample.



Rajah 27
Diagram 27

Berapakah jumlah aktiviti dan masa yang diambil selepas 2 kali separuh hayat?
What is the activity and time taken after 2 half-life?

	Aktiviti / pembilang per minit Activity / count per minute	Masa diambil / minit Time taken / minute
A	500	6.0
B	500	7.0
C	250	11.0
D	250	12.0

- 38 Dalam suatu tindak balas nuklear, tenaga nuklear, E boleh dihitung dengan menggunakan persamaan $E = mc^2$.

Apakah m ?

In the nuclear reactions, nuclear energy, E can be calculated by using equation, $E = mc^2$.

What is m ?

- A Cacat jisim dalam tindak balas
Mass defect in the reactions
- B Jumlah jisim selepas tindak balas
Total mass after reactions.
- C Jumlah jisim sebelum tindak balas
Total mass before reactions
- D Jisim neutron dalam tindak balas
Mass of the neutrons in the reactions

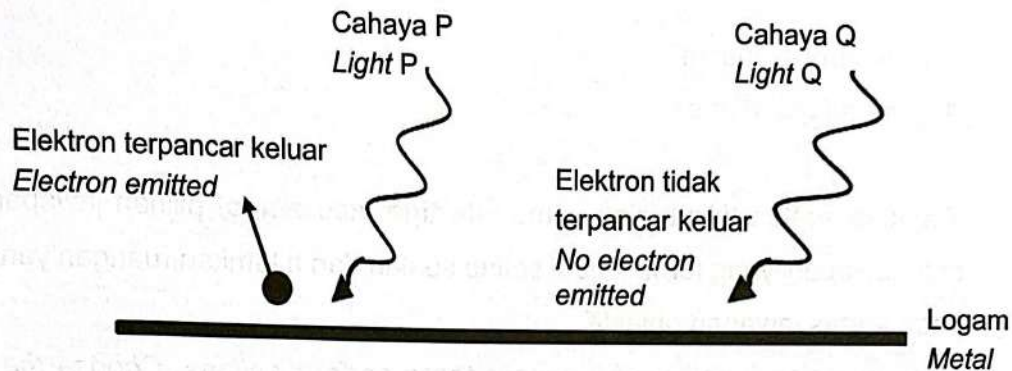
- 39 Dari persamaan fotoelektrik Einstein, $hf = hf_0 + \frac{1}{2}mv^2$ bagi suatu logam, simbol f_0 mewakili

From the Einstein's photoelectric equation, $hf = hf_0 + \frac{1}{2}mv^2$ for a metal, the symbol of f_0 represents

- A frekuensi minimum foton cahaya yang menghasilkan kesan fotoelektrik
the minimum frequency of light photon that produced photoelectric effect
- B frekuensi foton yang menghasilkan kesan fotoelektrik
the frequency of photon that produced photoelectric effect
- C tenaga kinetik maksimum fotoelektron
the maximum kinetic energy of photoelectron
- D pemalar Plank
Plank's constant

- 40 Rajah 28 menunjukkan permukaan logam yang disinari oleh dua cahaya P dan Q yang mempunyai panjang gelombang yang berbeza, λ_P dan λ_Q . Diberi frekuensi ambang bagi logam ini ialah f_0 .

Diagram 28 shows the metal surface is incident by two lights P and Q which have different wavelength, λ_P and λ_Q . Given the threshold frequency for the metal is f_0 .



Rajah 28

Diagram 28

Pernyataan manakah yang benar tentang situasi ini?

Which statements is correct about these situations?

- I $f_P > f_Q$
- II $\lambda_P < \lambda_Q$
- III $f_P > f_0 > f_Q$

- A I dan II sahaja
I and II only
- B I dan III sahaja
I and III only
- C II dan III sahaja
II and III only
- D I, II dan III
I, II and III

MODUL TAMAT