

**PEPERIKSAAN PERCUBAAN BERSAMA
SIJIL PELAJARAN MALAYSIA 2012**



**ANJURAN
MAJLIS PENGETUA
SEKOLAH MALAYSIA
(CAWANGAN PERLIS)**

PHYSICS

4531/1

Kertas 1

Ogos

1 $\frac{1}{4}$ jam

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALANINI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini*

Kertas soalan ini mengandungi 30 halaman bercetak

4531/1

[Lihat sebelah
SULIT

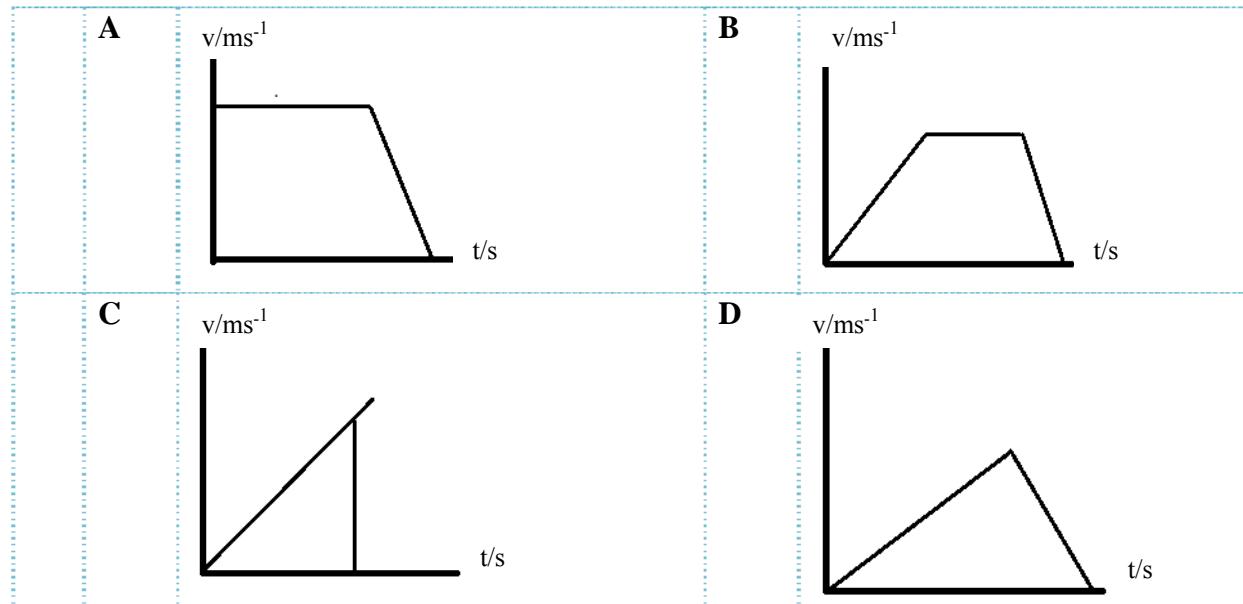
<http://edu.joshuatly.com/>
<http://fb.me/edu.joshuatly>

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

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

- | | |
|---|--|
| 1. $a = \frac{v-u}{t}$ | 18. Magnifying power /
$Kuasa pembesaran = \frac{f_o}{f_e}$ |
| 2. $v^2 = u^2 + 2as$ | |
| 3. $s = ut + \frac{1}{2}at^2$ | 19. $\nu = f\lambda$ |
| 4. Momentum = mv | 20. $\lambda = \frac{ax}{D}$ |
| 5. $F = ma$ | 21. $Q = It$ |
| 6. Kinetic energy / Tenaga kinetik = $\frac{1}{2}mv^2$ | 22. $E = VQ$ |
| 7. Gravitational potential energy /
Tenaga keupayaan graviti = mgh | 23. $V = IR$ |
| 8. Elastic potential energy /
Tenaga keupayaan kenyal = $\frac{1}{2}Fx$ | 24. Power / Kuasa, $P = IV$ |
| 9. Power, $P = \frac{\text{energy}}{\text{time}}$
Kuasa, $P = \frac{\text{tenaga}}{\text{masa}}$ | 25. $\frac{V_s}{V_p} = \frac{N_s}{N_p}$
Efficiency / Kecekapan
$= \frac{I_s V_s}{I_p V_p} \times 100 \%$ |
| 10. Density / Ketumpatan, $\rho = \frac{m}{V}$ | 26. $E = mc^2$ |
| 11. Pressure / Tekanan, $p = h\rho g$ | 27. $g = 10 \text{ m s}^{-2}$ |
| 12. Pressure / Tekanan, $p = \frac{F}{A}$ | 28. $c = 3.0 \times 10^8 \text{ m s}^{-1}$ |
| 13. Heat / Haba, $Q = mc\theta$ | |
| 14. Heat / Haba, $Q = ml$ | |
| 15. $\frac{pV}{T} = \text{constant} / \text{pemalar}$ | |
| 16. $n = \frac{\sin i}{\sin r}$ | 17. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ |

- 1** Which of the following quantities is a scalar quantity?
Antara kuantiti berikut yang manakah kuantiti skalar?
- | | |
|----------------------------------|---------------------------------------|
| A
speed
<i>laju</i> | B
velocity
<i>halaju</i> |
| C
force
<i>daya</i> | D
energy
<i>tenaga</i> |
- 2** Acceleration is a derived quantity. This quantity can be defined in base quantity as...
Pecutan ialah satu kuantiti terbitan. Kuantiti ini dapat ditakrifkan dalam kuantiti asas sebagai
- | | |
|---|---|
| A
$\frac{\text{distance}}{\text{time}}$
<i><u>Jarak</u></i>
<i>masa</i> | B
$\frac{\text{distance}}{\text{time} \times \text{time}}$
<i><u>Jarak</u></i>
<i>masa \times masa</i> |
| C
$\frac{\text{displacement}}{\text{time}}$
<i><u>Sesaran</u></i>
<i>masa</i> | D
$\frac{\text{displacement}}{\text{time} \times \text{time}}$
<i><u>Sesaran</u></i>
<i>masa \times masa</i> |
- 3** The volume of a container is 20 m^3 which is the same as
Isipadu sebuah bekas ialah 20 m^3 dimana ia bersamaan dengan
- | |
|--|
| A
$2 \times 10^2 \text{ cm}^3$ |
| B
$2 \times 10^6 \text{ cm}^3$ |
| C
$2 \times 10^7 \text{ cm}^3$ |
| D
$2 \times 10^8 \text{ cm}^3$ |
- 4** A toy car moving from rest with an acceleration and moves at constant velocity and reduce the velocity to stop in time, t . Among the velocity-time graph of the following is **correct** for the motion of the toy car?
*Sebuah kereta mainan bergerak dari keadaan pegun dengan suatu pecutan kemudian bergerak pada halaju seragam dan mengurangkan halajunya sehingga berhenti dalam masa T . Antara graf halaju-masa berikut, yang manakah **betul** bagi gerakan kereta mainan itu?*



- 5 The diagram 1 shows a bus passenger moving forward when bus stop suddenly at traffic light.

Rajah 1 menunjukkan keadaan penumpang bas yang bergerak ke hadapan apabila bas berhenti secara tiba-tiba di lampu isyarat.

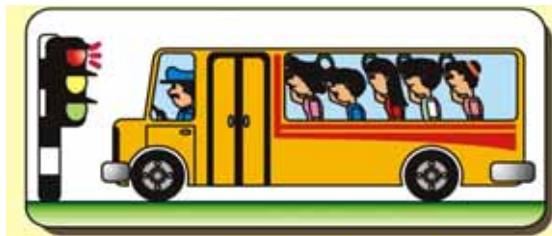


Diagram 1 / Rajah 1

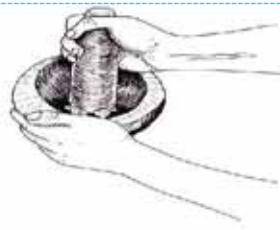
The forward movement of the bus passenger can be explained by
Pergerakan penumpang itu ke hadapan boleh diterangkan oleh

- A** Principle of conservation of momentum
Prinsip keabadian momentum
- B** The concept of equilibrium of forces
Konsep keseimbangan daya
- C** Principle of conservation of energy
Prinsip keabadian tenaga
- D** The concept of inertia
Konsep inertia

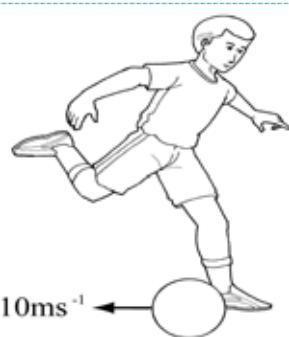
- 6 Which of the following diagram shows produced the smallest impulsive force?

Antara rajah berikut yang manakah menghasilkan daya impuls paling kecil?

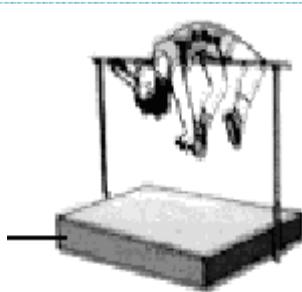
A



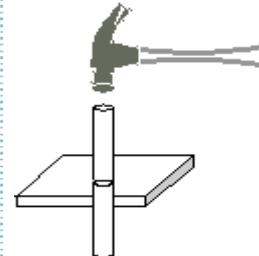
B



C



D



- 7 Diagram 2 below shows a racing car moving on a road.

Rajah 2 di bawah menunjukkan sebuah kereta lumba yang bergerak di jalan raya.

Thrust

$$F_1 = 3000\text{N}$$



Frictional force

$$F_2 = 500\text{ N}$$

Diagram 2 / Rajah 2

- What is the value of the net force on this car?

Apakah nilai daya bersih pada kereta itu?

A 3500 N

B 2500 N

C 3200 N

D 1500 N

[Lihat sebelah
SULIT

- 8** Samy is releasing a mass of 2 kg metal ball from a building of 40 m height.
Samy sedang melepaskan bola besi berjisim 2 kg pada ketinggian 40 m dari sebuah bangunan.

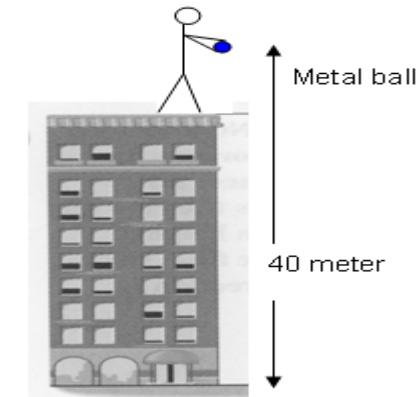


Diagram 3 / Rajah 3

At the height of 40 m, the metal ball has..

Pada ketinggian 40 m, bola logam itu mempunyai

- | | |
|----------|---|
| A | Gravitational potential energy
<i>Tenaga keupayaan graviti</i> |
| B | Kinetic energy
<i>Tenaga kinetik</i> |
| C | Momentum
<i>Momentum</i> |
| D | Force
<i>Daya</i> |

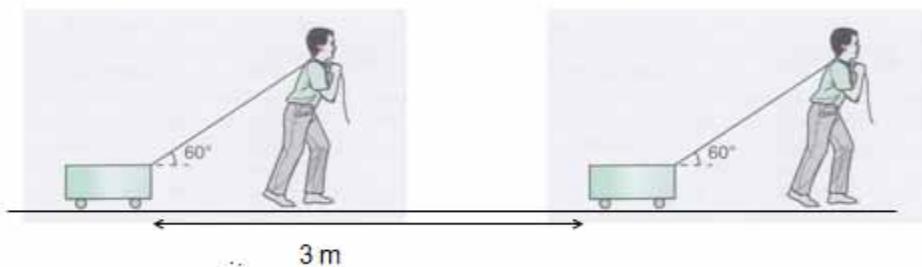
9

Diagram 4 / Rajah 4

Diagram show Azman is pulling a box with a force of 50 N at an angle of 60° from the horizontal. Calculate the work done to move the box to a distance of 3 m.

Rajah menunjukkan Azman menarik sebuah kotak dengan daya 50 N pada sudut 60° secara mengufuk. Kirakan kerja yang dilakukan untuk menggerakkan kotak itu pada jarak 3 m.

- | | | | |
|----------|-------|----------|--------|
| A | 75 J | C | 500 J |
| B | 150 J | D | 1500 J |

[Lihat sebelah

SULIT

- 10** Diagram 5 shows an aeroplane flying horizontally with constant velocity.
Rajah 5 menunjukkan sebuah kapal terbang sedang terbang secara mendatar dengan halaju seragam.

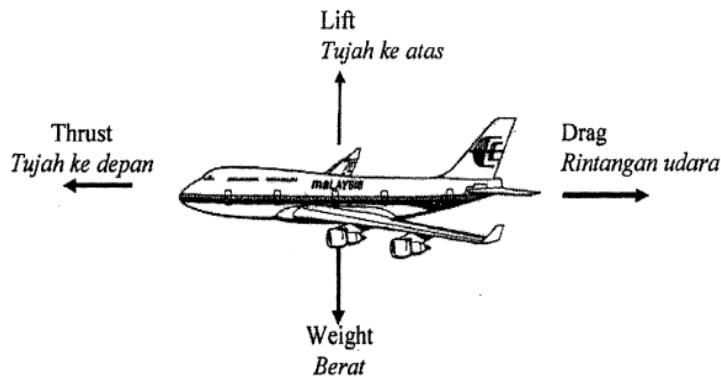


Diagram 5 / Rajah 5

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

- A** Weight > Lift
Berat > Tujah ke atas
- B** Lift > Weight
Tujah ke atas > Berat
- C** Thrust = Drag
Tujah ke depan = Rintangan udara
- D** Thrust > Drag
Tujah ke depan > Rintangan udara

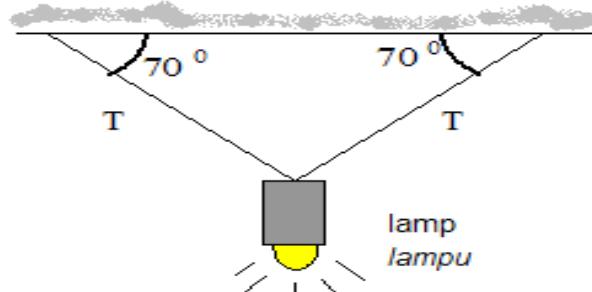
11

Diagram 6 / Rajah 6

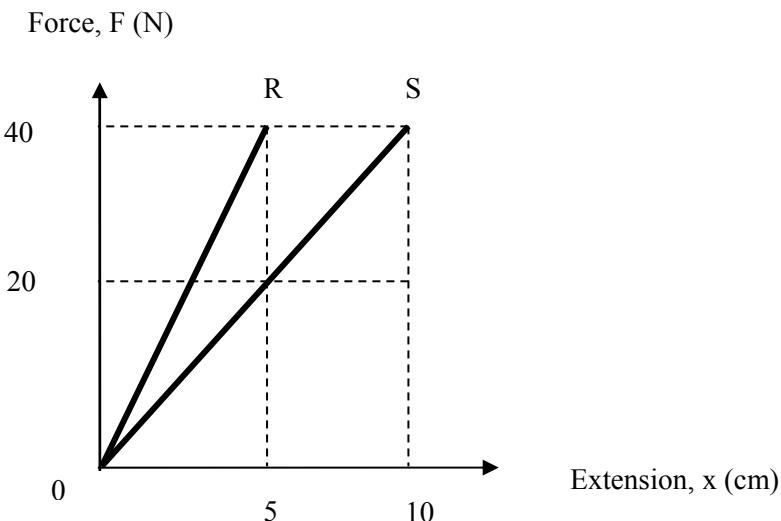
A lamp of mass 1.5 kg is hung from a ceiling as shown in the diagram 6 above. Calculate the tension, T , in the rope

Sebiji lampu berjisim 1.5 kg di gantung pada siling seperti ditunjukkan dalam rajah 6 diatas. Kirakan tegangan, T , pada tali itu?

- A** 6.98 N
- B** 7.22 N
- C** 6.22 N
- D** 7.98 N

[Lihat sebelah
 SULIT

- 12 The force-extension graphs for two springs, R and S are shown below.
Graf daya-pemanjangan pada dua spring R dan S ditunjukkan dibawah.



From the graph, which is a **TRUE**?
Daripada graf, antara berikut yang manakah BENAR ?

- A Spring R stores more elastic potential energy than spring S
Spring R menyimpan lebih banyak tenaga keupayaan kenyal berbanding spring S
- B The force constant of spring S is bigger compared to spring R
Daya malar pada spring S lebih besar berbanding spring
- C The gradient of the graph R is small compared to spring S
Kecerunan graf R lebih kecil berbanding spring S
- D Spring S is more stiff compared to spring R
Spring S lebih keras berbanding spring R

- 13 Three different shapes of cuboids of 6 kg are placed on a table. Which of cuboids **A**, **B** and **C** is highest pressure on the table?

Tiga bentuk kuboid 6 kg yang berlainan bentuk diletakkan diatas meja. Antara kuboid A, B dan C yang manakah mempunyai tekanan paling tinggi di atas meja?

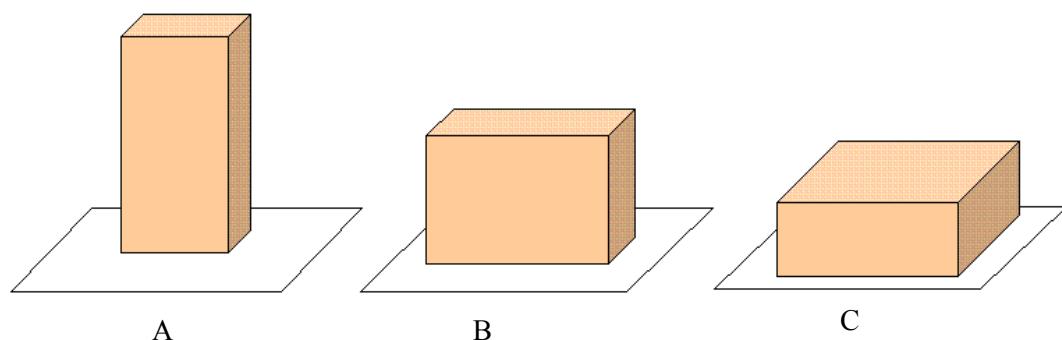


Diagram 7 / Rajah 7

- 14 The diagram shows a simple hydraulic system.
Rajah menunjukkan sistem hidraulik ringkas.

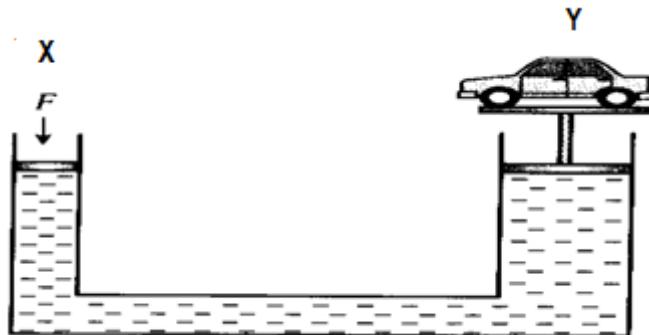


Diagram 8 / Rajah 8

What are the force and pressure at Y compared to the force and pressure at X?
Apakah nilai daya dan tekanan pada Y berbanding daya dan tekanan pada X?

	Force at Y compared to X <i>Daya pada Y berbanding X</i>	Pressure at Y compared to X <i>Tekanan pada Y berbanding X</i>
A	Smaller <i>Lebih Kecil</i>	Smaller <i>Lebih Kecil</i>
B	Equal <i>Sama</i>	Equal <i>Sama</i>
C	Larger <i>Lebih Besar</i>	Equal <i>Sama</i>
D	Larger <i>Lebih Besar</i>	Larger <i>Lebih Besar</i>

- 15 Diagram 9 below shows the situation of a sheet of paper before and when air is blown.
Rajah 9 menunjukkan situasi sebelum dan bila udara di tiup pada sekeping kertas.

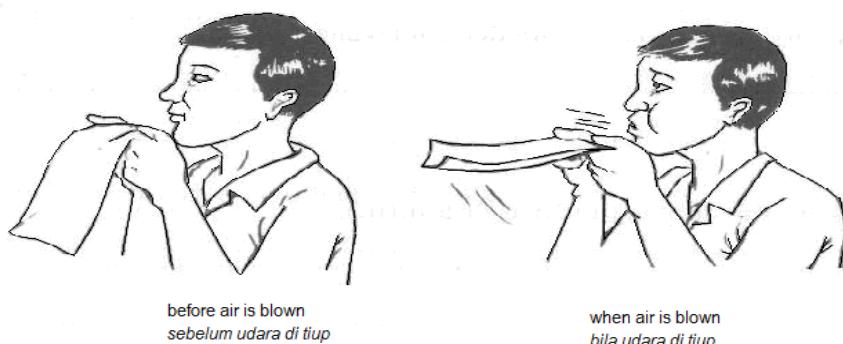


Diagram 9 / Rajah 9

What happen to the speed and pressure above sheet of paper when air is blown?
Apakah yang berlaku pada laju dan tekanan di bahagian atas kertas apabila udara di tiup?

	Air speed <i>Laju udara</i>	Pressure <i>Tekanan</i>
A	Increase <i>Bertambah</i>	Decrease <i>Berkurang</i>
B	Increase <i>Bertambah</i>	Increase <i>Bertambah</i>
C	Decrease <i>Berkurang</i>	Increase <i>Berkurang</i>
D	Decrease <i>Berkurang</i>	Increase <i>Bertambah</i>

- 16 Diagram 10 shows a glass of water is overturned on a piece of cardboard.
- Rajah 10 menunjukkan segelas air yang diterbalikkan dengan sekeping kad bod dibawahnya.*

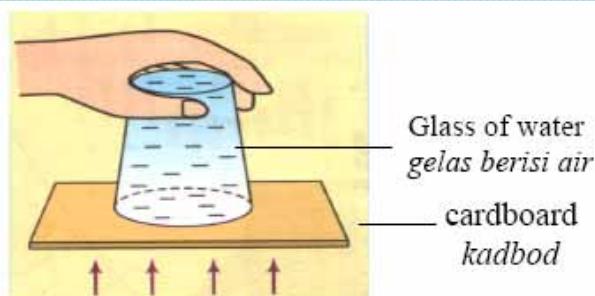


Diagram 10 / Rajah 10

Student found that water does not come out of the glass. What is the physics concept involved?

Pelajar mendapati air tidak terkeluar dari gelas. Apakah konsep fizik yang terlibat?

- A Liquid pressure
Tekanan cecair
- B Atmospheric pressure
Tekanan atmosfera
- C Gas pressure
Tekanan gas

- 17** Diagram 11 show bubbles of gas, escaping from the mud at the bottom of a deep lake, rise to the surface.

Rajah 11 menunjukkan buih-buih gas membesar apabila ia naik mendekati permukaan air

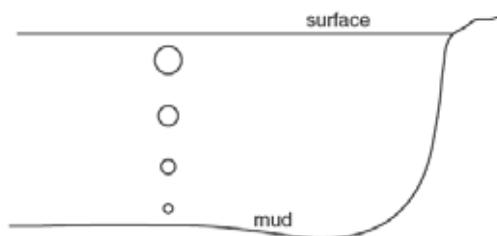


Diagram 11 / Rajah 11

Bubbles become larger as the bubbles rise to the surface of water because....

Saiz buih bertambah apabila mendekati permukaan air kerana.....

- A** Atmospheric pressure on the bubbles decreases

Tekanan atmosfera pada buih berkurangan

- B** Atmospheric pressure on the bubbles increases

Tekanan atmosfera pada buih meningkat

- C** Water pressure on the bubbles decreases

Tekanan air pada buih berkurangan

- D** Water pressure on the bubbles increases

Tekanan air pada buih meningkat

- 18** Diagram 12 shows two metal blocks touching each other.

Rajah 12 menunjukkan dua blok logam menyentuh satu sama lain.

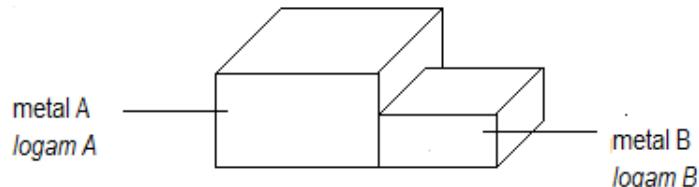


Diagram 12 / Rajah 12

Thermal equilibrium is reached when both of them have the same

Keseimbangan terma tercapai apabila kedua-duanya sama

- A** mass

Jisim

- C** temperature

suhu

- B** volume

isipadu

- D** density

ketumpatan

[Lihat sebelah

SULIT

- 19** Diagram 13 shows a man were injured.
Rajah 13 menunjukkan seorang lelaki yang mengalami kecederaan.



Diagram 13 / Rajah 13

Injury of a hand due to steam is much serious compare a boiling water. This is because...
Kecederaan tangan yang disebabkan oleh terkena stim lebih serius berbanding terkena air mendidih. Ini disebabkan...

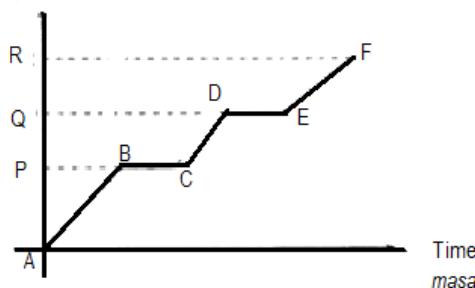
- A** steam has larger specific heat capacity
stim mempunyai muatan haba tentu yang lebih besar
- B** steam has larger specific latent heat
stim mempunyai hapa tentu yang besar
- C** temperature of boiling water is lower than temperature of steam
suhu air mendidih adalah rendah daripada suhu stim
- D** heat of boiling water easily release to the surroundings
Haba air mendidih mudah terbebas ke persekitaran

- 20** In an experiment, Azmi uses an electric heater to heat 1.0 kg of ice at 0°C until it becomes water at 60°C . Calculate the electrical energy used in the experiment.
[Specific heat capacity of water = $4.2 \times 10^3 \text{ J kg}^{-1} \text{ }^{\circ}\text{C}^{-1}$, specific latent heat of fusion of ice = $3.34 \times 10^5 \text{ J kg}^{-1}$]

Dalam eksperimen, Azmi menggunakan pemanas elektrik untuk memanaskan 1.0 kg ais pada 0°C sehingga ia menjadi air pada 60°C . Kirakan tenaga elektrik yang digunakan dalam eksperimen itu.

- A** $2.12 \times 10^5 \text{ J}$
- B** $4.68 \times 10^5 \text{ J}$
- C** $5.86 \times 10^5 \text{ J}$
- D** $7.54 \times 10^5 \text{ J}$

- 21** Temperature
Suhu



[Lihat sebelah
 SULIT

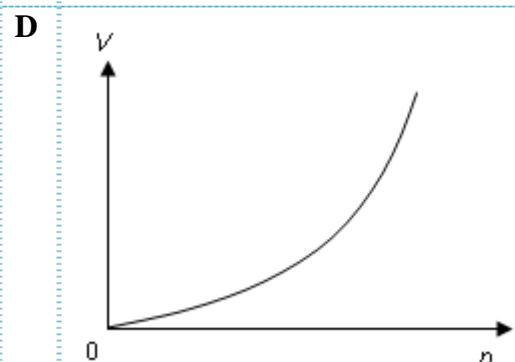
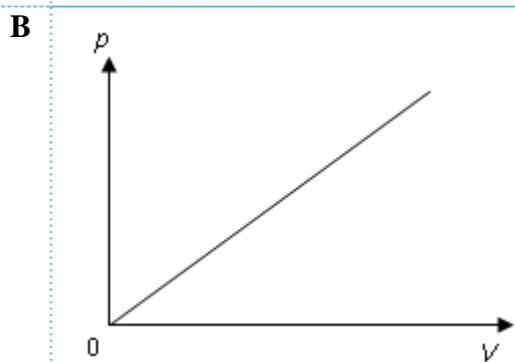
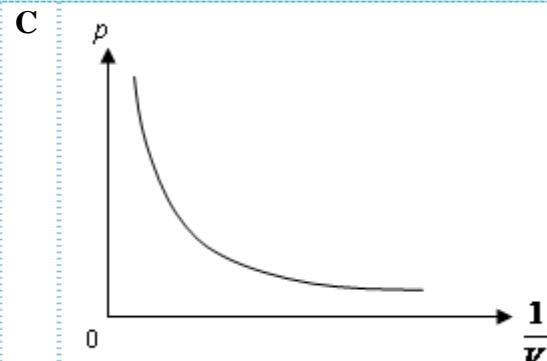
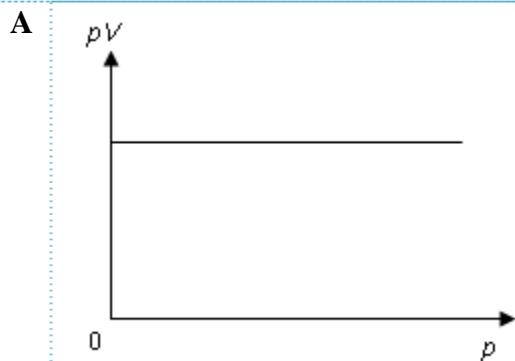
P is the melting point of naphthalene. During the melting process occurs what happens at a temperature of naphthalene that?

P merupakan takat lebur bagi naftalena. Semasa proses peleburan berlaku apakah yang berlaku pada suhu naftalena itu?

- A Increases
bertambah
- B Constant
tetap
- C Decrease
berkurang

22 Which graph shows the relationship between the pressure and volume of a gas that obeys Boyle's law?

Graf manakah menunjukkan hubungan antara tekanan dan isipadu bagi suatu gas yang mematuhi hukum Boyle?



- 23** Diagram 14 shows the top view of the student standing 3 m from plane mirror in a room. The student can see the image of the wall clock located 2 m behind him.
Rajah 14 menunjukkan pandangan dari atas seorang pelajar berdiri 3 m dari sebuah cermin satah di dalam sebuah bilik. Pelajar itu dapat melihat imej jam dinding yang berada 2 m dibelakangnya.

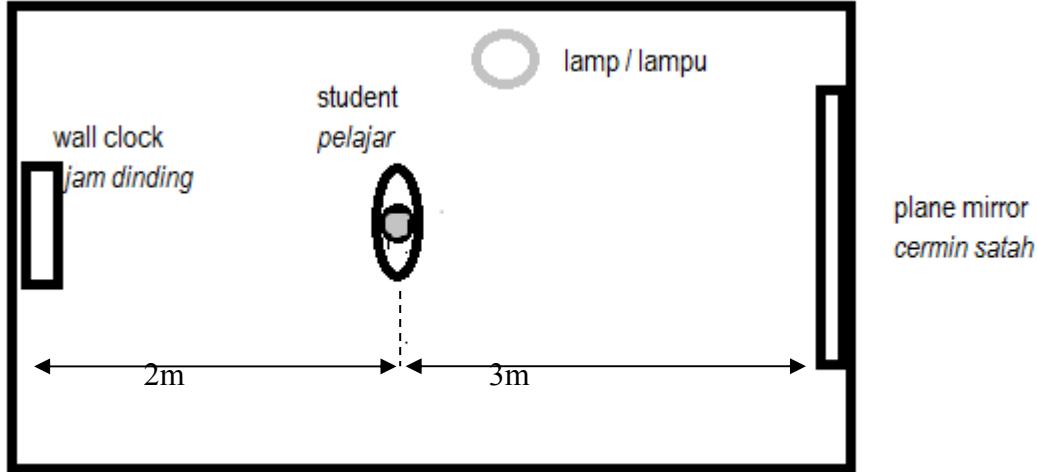


Diagram 14 / Rajah 14

What is the distance between the student and the image of the wall clock?
Berapakah jarak diantara pelajar itu dengan imej jam dinding?

- | | |
|---|------|
| A | 5 m |
| B | 6 m |
| C | 8 m |
| D | 10 m |

- 24** Diagram 15 shows a raindrop for formation of rainbow.
Rajah 15 menunjukkan titisan air hujan dalam pembentukan pelangi.

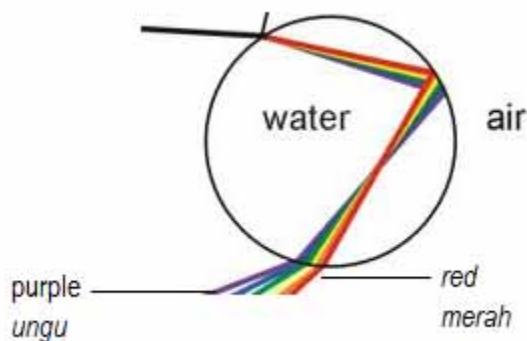


Diagram 15 / Rajah 15

What is the wave's phenomenon occurs?
Apakah fenomena gelombang yang berlaku?

- A** Refraction of light
Pembiasan cahaya
- B** Diffraction of light
Pembelauan cahaya
- C** Interference of light
Inteferensi cahaya
- D** Total internal reflection
Pantulan dalam penuh

25

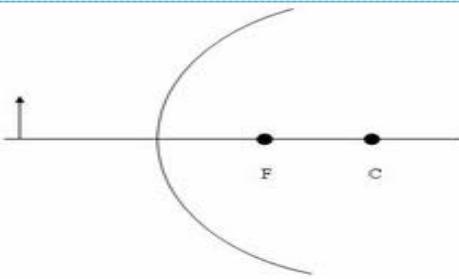


Diagram 16 / Rajah 16

Diagram 16 shows an object placed at a distance in front of convex mirror.
 What are the characteristics of the image formed?

Rajah 16 menunjukkan satu objek diletakkan pada suatu jarak di hadapan satu cermin cembung.

Apakah ciri-ciri imej yang terbentuk?

- A** Real, inverted, enlarged
Nyata, songsang, diperbesarkan
- B** Real , inverted , diminished
Nyata, songsang, diperkecilkan
- C** Virtual , upright, diminished
Maya, tegak, diperkecilkan
- D** Virtual , upright, enlarged
Maya, tegak, diperbesarkan

26

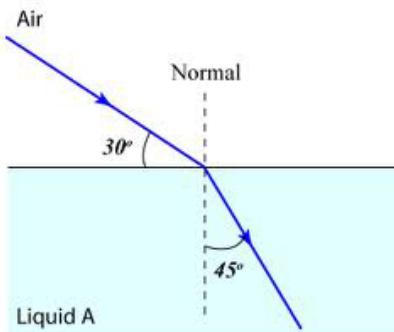


Diagram 17 / Rajah 17

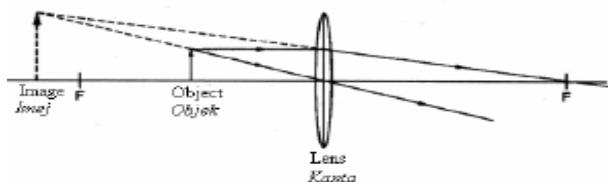
Diagram 17 shows a ray of light passes from air into liquid A. What is the index of refraction, n of the liquid A?

Rajah 17 menunjukkan satu sinar cahaya merambat dari udara ke dalam cecair A. berapakah indek biasan, n bagi cecair A itu?

- A 1.22
- B 0.71
- C 1.00
- D 2.22

27 Diagram 18 shows a converging lens producing an upright and virtual image.

Rajah 18 menunjukkan kanta penumpu yang menghasilkan imej tegak dan maya.



Rajah 18 / Rajah 18

Which type of optical device has such characteristic?

Alat optik yang manakah mempunyai ciri-ciri tersebut?

A



C



B

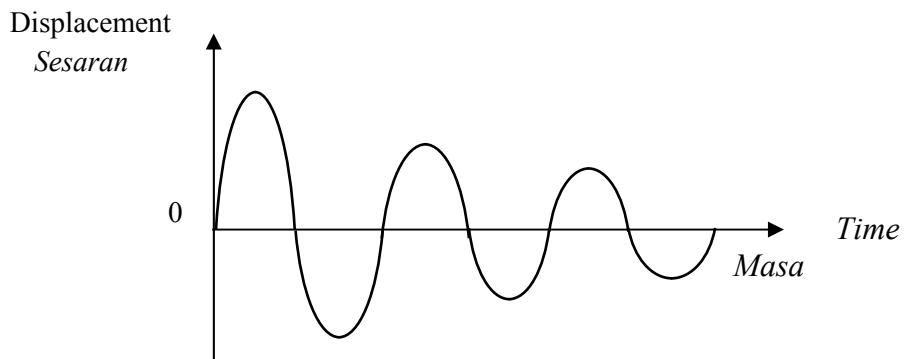


D



[Lihat sebelah
SULIT

- 28 Graph shows a displacement – time graph of an oscillating spring.
Graf menunjukkan graf sesaran – masa bagi suatu ayunan spring



The spring is undergoing
Spring itu sedang mengalami

- A resonance
resonans
- B damping
pelembapan
- C Modulation
Modulasi
- D Rectification
Rektifikasi

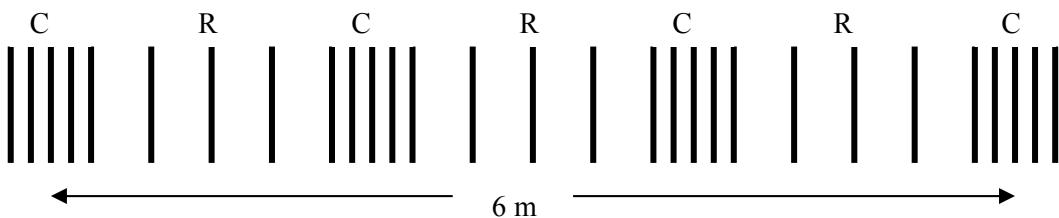
- 29 What happens to the frequency and the wavelength of water waves when it moves from a deep region to shallow region of water?

Apakah yang berlaku kepada frekuensi dan panjang gelombang air apabila ia bergerak dari kawasan air dalam ke kawasan air cetek?

	Frequency <i>Frekuensi</i>	Wavelength <i>Panjang gelombang</i>
A	Decreases <i>Berkurang</i>	Decreases <i>Berkurang</i>
B	Unchanged <i>Tidak berubah</i>	Decreases <i>Berkurang</i>
C	Unchanged <i>Tidak berubah</i>	Increases <i>Bertambah</i>
D	Increases <i>Bertambah</i>	Increases <i>Bertambah</i>

- 30** Diagram 19 shows a sound wave propagating in air.

Rajah 19 menunjukkan gelombang bunyi merambat di udara



C – compression / mampatan

R – rarefaction / regangan

Diagram 19 / Rajah 19

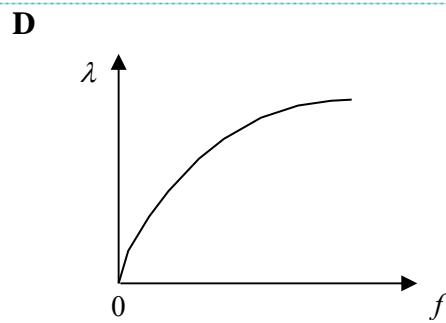
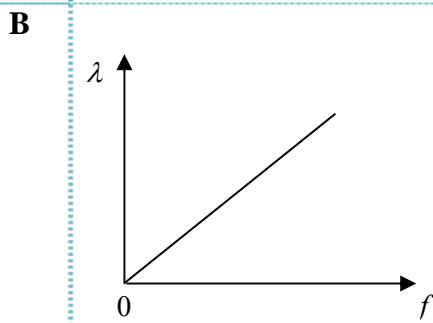
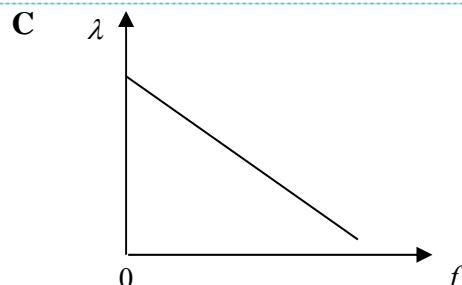
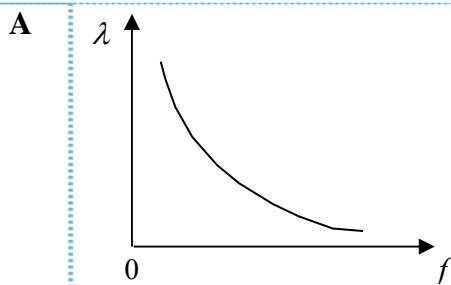
The speed of sound wave is 340 m s^{-1} . What is the frequency of the sound wave?

Kelajuan gelombang bunyi ialah 340 m s^{-1} . Berapakah frekuensi gelombang bunyi ini?

- A 56 Hz
- B 170 Hz
- C 340 Hz
- D 680 Hz

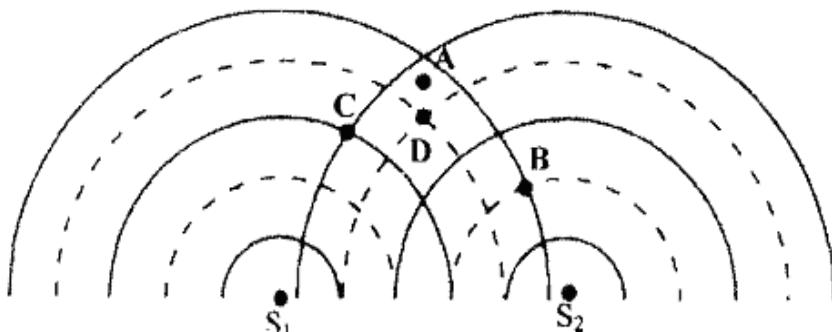
- 31** Which graph shows the correct relationship between the wavelength, λ , and the frequency, f of waves in electromagnetic spectrum

Graf yang manakah menunjukkan hubungan yang betul antara panjang gelombang, λ , dan frekuensi, f gelombang di dalam spektrum elektromagnet



- 32** The diagram 20 shows an interference pattern of two coherent water waves of sources, P and Q.

Rajah 20 menunjukkan corak interferen dari dua sumber koheren gelombang air P dan Q.



— Crest /puncak
- - - - - trough/ lembangan

Diagram 20 / Rajah 20

Which of the positions **A**, **B**, **C** or **D**, does destructive interference occur
Antara kedudukan A, B, C atau D, yang manakah berlakunya interferensi memusnah?

- 33** Which statement is correct when water waves are diffracted after propagate through an obstacle

Pernyataan manakah yang betul apabila gelombang air dibelaikan selepas merambat melalui penghalang

- A** The velocity of water waves decreases after diffraction
Halaju gelombang air berkurang selepas pembelaian

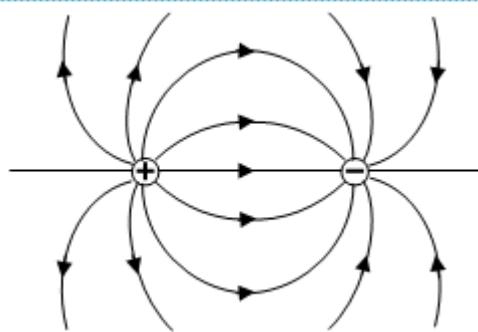
- B** The wavelength of water waves becomes longer after diffraction
Panjang gelombang air menjadi lebih panjang selepas pembelaian

- C** The amplitude of water waves becomes smaller after diffraction
Amplitude gelombang air menjadi lebih kecil selepas pembelaian

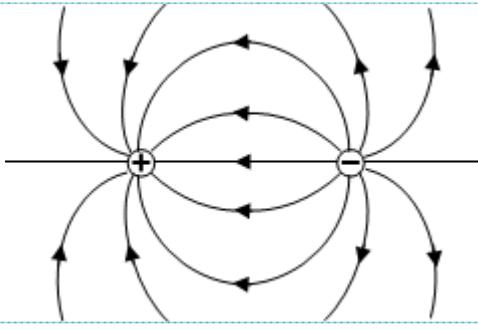
34 Which diagram shows the correct electric field pattern?

Rajah manakah yang menunjukkan corak medan elektrik yang betul?

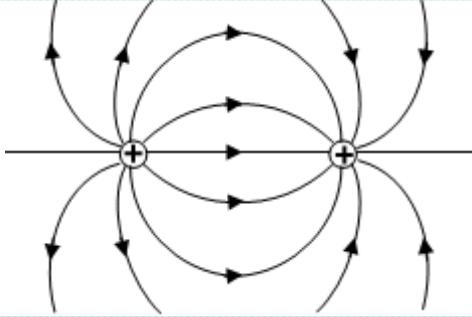
A



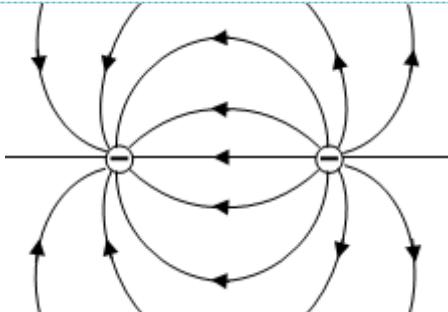
B



C



D



[Lihat sebelah
SULIT

- 35** Diagram 21 shows current flowing through two resistors in series. A_1 and A_2 are ammeters while V_1 and V_2 are voltmeters.
*Rajah 21 menunjukkan arus mengalir melalui dua perintang yang disambung sesiri..
 A_1 dan A_2 adalah ammeter manakala V_1 dan V_2 adalah voltmeter.*

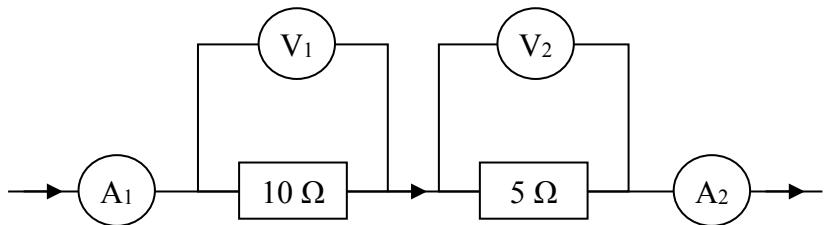


Diagram 21 / Rajah 21

Which is the correct comparison of the ammeter and voltmeter readings?
Perbandingan yang manakah benar tentang bacaan ammeter dan voltmeter?

	Ammeter reading / Bacaan ammeter, A	Voltmeter reading / Bacaan voltmeter, V
A	$A_1 < A_2$	$V_1 < V_2$
B	$A_1 > A_2$	$V_1 > V_2$
C	$A_1 = A_2$	$V_1 > V_2$
D	$A_1 = A_2$	$V_1 < V_2$

- 36** P, Q and R are three different types of wires with the same length and diameter. P is nichrome wire, Q is constantan wire and R is iron wire.
*P, Q dan R adalah tiga jenis dawai dengan panjang dan diameter yang sama.
P ialah dawai nikrom. Q ialah dawai konstantan dan R ialah dawai besi.*

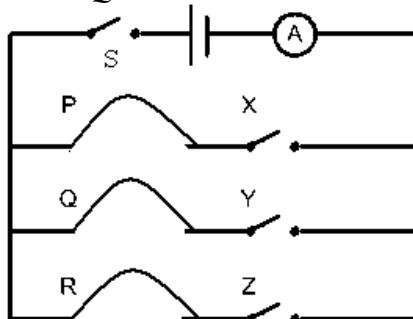


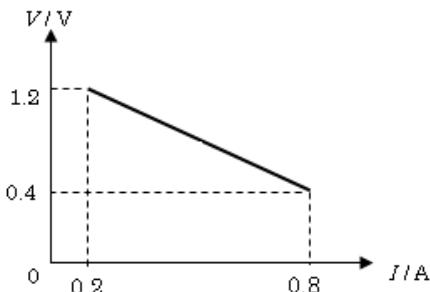
Diagram 22 / Rajah 22

Which switches should be switched on to get the largest reading of ammeter?
Suis yang manakah harus dihidupkan supaya ammeter menghasilkan bacaan paling besar?

- | | | | |
|----------|----------------|----------|-----------------|
| A | S and X | C | S and Z |
| | <i>S dan X</i> | | <i>S dan Z</i> |
| B | S and Y | D | S only |
| | <i>S dan Y</i> | | <i>S sahaja</i> |

- 37** Graph shows a graph the potential difference, V , across the terminals of a cell changes with the current, I , through the dry cell.

Graf menunjukkan graf beza keupayaan, V , merentasi terminal sebuah sel berubah dengan arus, I , melalui sel kering itu.



What is the internal resistance of the cell?

Berapakah rintangan dalam sel itu?

- | | | | |
|----------|---------------|----------|---------------|
| A | 0.20 Ω | C | 1.25 Ω |
| B | 0.75 Ω | D | 1.33 Ω |

- 38** Diagram 23 shows a bird perching on a high voltage cable but it does not experience an electric shock.

Rajah 23 menunjukkan seekor burung sedang hinggap pada kabel elektrik bervoltan tinggi tetapi ia tidak mengalami renjatan elektrik.

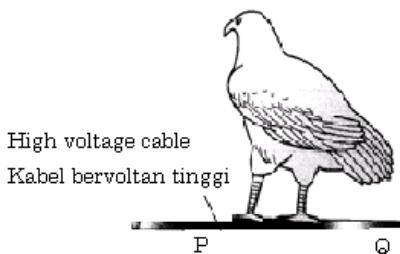


Diagram 23 / Rajah 23

The eagle does not experience an electric shock because
Burung helang tidak mengalami renjatan elektrik kerana

- | | |
|----------|---|
| A | the potential difference across P and Q is high
<i>beza keupayaan merentasi P dan Q tinggi</i> |
| B | the current flowing through its body is very small
<i>arus yang mengalir melalui badan burung sangat kecil</i> |
| C | the resistance of the cable across P and Q is very high
<i>rintangan kabel antara P dan Q sangat tinggi</i> |
| D | The body of the bird has a low resistance
<i>Badan burung mempunyai rintangan yang kecil</i> |

[Lihat sebelah
SULIT]

- 39** An electric kettle is labelled “240V, 2 kW”. How much energy is used by the electric kettle in one minute if it is connected to a 240V power supply?

Satu cerek elektrik berlabel “240V, 2 kW”. Berapakah tenaga yang digunakan oleh cerek tersebut dalam satu minit jika ia disambung kepada bekalan kuasa 240V?

- A** 1.2×10^4 J
- B** 1.2×10^5 J
- C** 2.0×10^5 J
- D** 4.8×10^5 J

- 40** The motion of a current carrying conductor in a magnetic fields can be determined by

Gerakan konduktor yang membawa arus dalam medan magnet boleh ditentukan oleh

- A** Right hand Grip Rule
Petua Genggaman Tangan Kanan
- B** Fleming's Right Hand Rule
Petua Tangan Kanan Fleming
- C** Fleming's Left Hand Rule
Petua Tangan Kiri Fleming
- D** Direction of current flow
Arah arus mengalir

- 41** Diagram 24 shows a current-carrying conductor in a magnetic field.

Rajah 24 menunjukkan konduktor pembawa arus di dalam medan magnet.

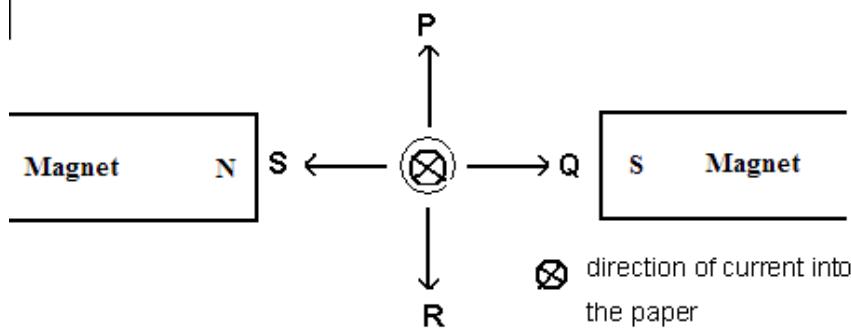


Diagram 24 / Rajah 24

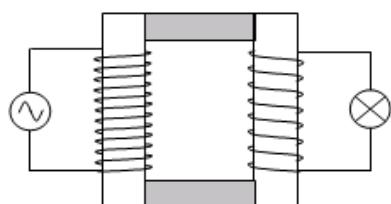
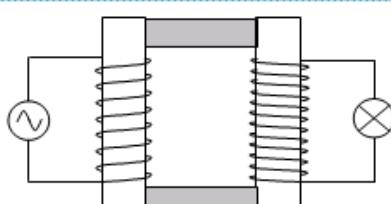
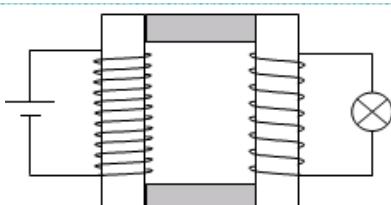
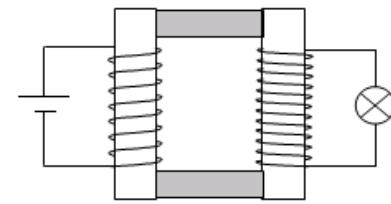
Which direction does a force act on the conductor?

Manakah arah daya yang bertindak ke atas konduktor itu?

- A** P
- B** Q
- C** R
- D** S

[Lihat sebelah
SULIT]

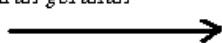
- 42** Which circuit shows voltage being stepped up?
Litar manakah menunjukkan voltan diinjak naik?

A**B****C****D**

- 43** Diagram 25 shows the galvanometer pointer deflects when a magnet is pushed into a coil of wire.
Rajah 25 menunjukkan jarum penunjuk sebuah galvanometer terpesong apabila sebatang magnet ditolak memasuki satu gelung dawai.

Direction of the movement

Arah gerakan



S	N
---	---

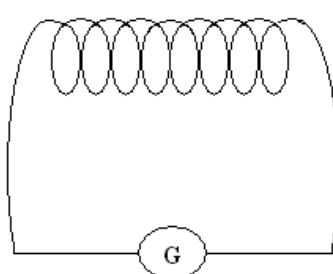


Diagram 25 / Rajah 25

[Lihat sebelah
 SULIT]

Which actions will cause the deflection of galvanometer increases?

Langkah yang manakah akan menyebabkan pesongan galvanometer bertambah?

- A decrease the number of coils

mengurangkan bilangan lilitan

- B push the magnet faster towards the coil

menolak magnet lebih laju kearah gezelung.

- C use coil that is made from insulated wire

menggunakan gezelung yang dibuat daripada wayar bertebat

- D reverse the magnetic pole of the magnet

menyongsangkan kekutuban magnet

- 44 The adding of impurity into pure semiconductor material is known as

Penambahan bendasing ke dalam bahan semikonduktor tulen dikenali sebagai

- A doping / pendopan

- B rectification / rektifikasi

- C amplification / amplifikasi

- D thermionic emission / pancaran termion

- 45 Diagram 26 shows a combination of two logic gates.

Rajah 26 menunjukkan gabungan dua get logik.

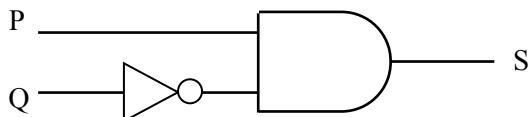
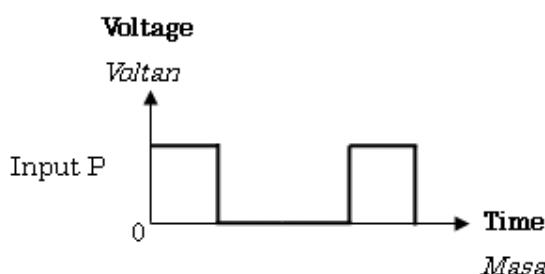
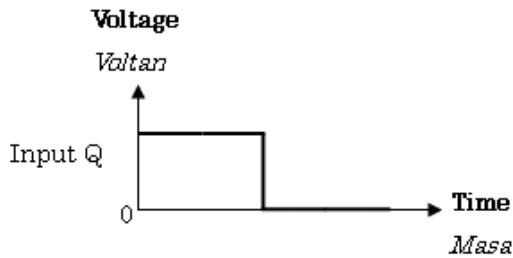


Diagram 26 / Rajah 26

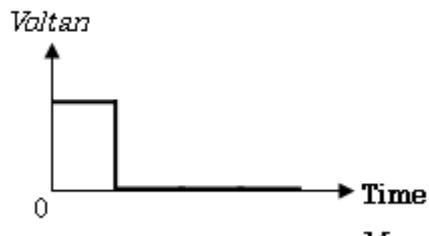
Diagram shows the signals applied to the inputs P and Q.

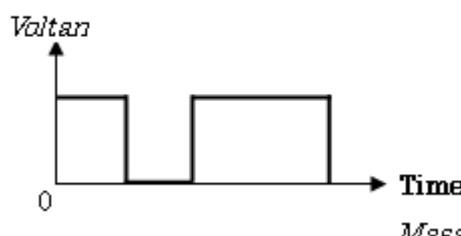
Rajah menunjukkan isyarat-isyarat yang disambungkan ke input P dan Q.

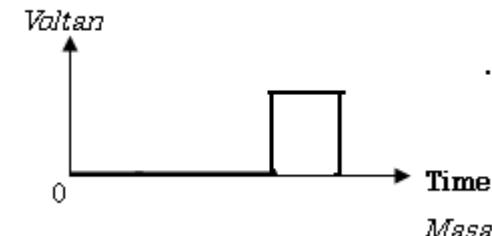


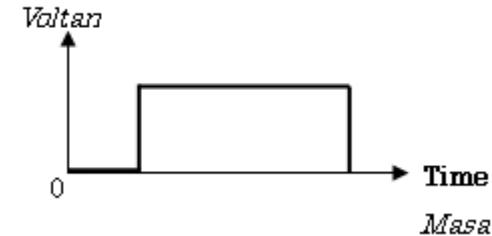


Which of the following shows the waveform from the output S?
Antara berikut yang manakah menunjukkan output bagi S?

A 

B 

C 

D 

[Lihat sebelah
SULIT

- 46** Diagram 27 shows a transistor circuit.

Rajah 27 menunjukkan satu litar transistor.

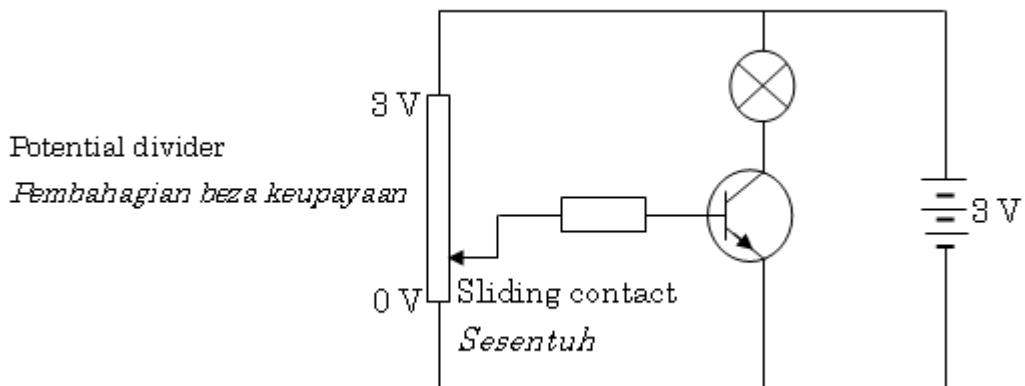


Diagram 27 / Rajah 27

What would be observed if the sliding contact is moved from the 0 V end to the 3 V end of the potential divider?

Apakah yang akan diperhatikan jika sesentuh gelongsor itu digerakkan dari hujung 0 V ke hujung 3 V bagi pembahagi beza keupayaan itu?

- A** The brightness of the lamp increases

Kecerahan lampu itu bertambah

- B** The brightness of the lamp decreases

Kecerahan lampu itu berkurang

- C** The lamp lights up with a same brightness

Lampu itu menyala dengan kecerahan yang sama

- 47** Diagram 28 shows an electron beam in a cathode-ray tube.

Rajah 28 menunjukkan satu alur elektron dalam sebuah tiub sinar katod.

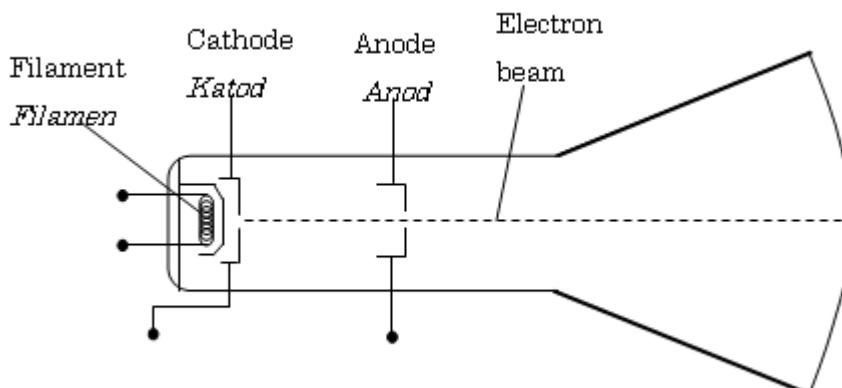
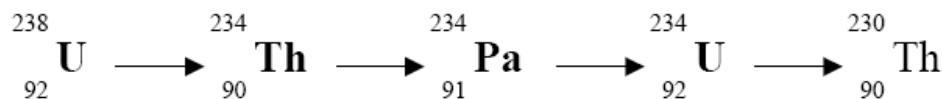


Diagram 28 / Rajah 28

Which of the following actions will cause the electron beam to be deflected?
Antara tindakan berikut, yang manakah akan menyebabkan alur elektron itu dipesong?

- A** Increase the current in the filament
Tambah arus dalam filamen
- B** Increase the potential difference between the anode and cathode
Tambah beza keupayaan antara anod dan katod
- C** Apply a magnetic field near the electron beam
Kenakan medan magnet berhampiran dengan alur elektron
- D** Decrease the distance between the anode and cathode
Kurangkan jarak antara anod dan katod

- 48** The figure below shows the decaying series of the isotope Uranium-238
Persamaan di bawah menunjukkan satu siri reputan bagi isotop Uranium-238.



Calculate the number of alpha and beta particles emitted.
Hitungkan bilangan zarah alfa dan zarah beta yang dipancarkan?

	Number of alpha particles <i>Bilangan zarah alfa</i>	Number of beta particles <i>Bilangan zarah beta</i>
A	1	3
B	3	1
C	2	2
D	0	4

- 49** Which radioisotope is most suitable to be injected into the body for the radioactive imaging of an organ?
Radioisotop yang manakah paling sesuai untuk disuntik ke dalam badan bagi tujuan pengimejan radioaktif sesuatu organ?

	Half-life <i>Setengah Hayat</i>	Radiation emitted <i>Sinaran yang dikeluarkan</i>
A	6 hours <i>6 jam</i>	Low energy gamma rays <i>Sinaran gama bertenaga rendah</i>
B	48 hours <i>48 jam</i>	High energy beta particles <i>Zarah beta bertenaga tinggi</i>
C	24 days <i>24 hari</i>	Low energy alpha particles <i>Zarah alfa bertenaga rendah</i>
D	138 days <i>138 hari</i>	High energy gamma rays <i>Sinaran gama bertenaga tinggi</i>

- 50** In a fission reaction, 0.09% of the mass of uranium-235 is changed to nuclear energy. Calculate the energy released when 1 g of uranium-235 is fissioned in a nuclear reactor.
Dalam suatu tindak balas pembelahan, 0.09% daripada jisim uranium-235 ditukarkan kepada tenaga. Hitungkan tenaga yang dibebaskan apabila 1 g uranium-235 dibelahkan di dalam sebuah reaktor nuklear.
- [Speed of light, $c = 3 \times 10^8 \text{ m s}^{-1}$]
[Laju cahaya, $c = 3 \times 10^8 \text{ m s}^{-1}$]
- A** $2.7 \times 10^2 \text{ J}$
B $2.7 \times 10^5 \text{ J}$
C $8.1 \times 10^{10} \text{ J}$
D $8.1 \times 10^{15} \text{ J}$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of **50** questions.
Kertas soalan ini mengandungi 50 soalan.
2. Answer **all** questions.
Jawab semua soalan.
3. Each question is followed by either **three** or **four** options. Choose the best option for each question and blacken the correct space on the answer sheet.
Tiap-tiap soalan diikuti oleh sama ada tiga atau empat pilihan jawapan. Pilih satu jawapan yang terbaik bagi setiap soalan dan hitamkan ruangan yang betul pada kertas jawapan anda.
4. Blacken only **one** space for each question.
Hitamkan satu ruangan sahaja bagi setiap soalan.
5. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.
Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh deprogram.
8. A list of formulae is provided on page 2.
Satu senarai formula disediakan di halaman 2.

NAMA	
TINGKATAN	

**PEPERIKSAAN PERCUBAAN BERSAMA
SIJIL PELAJARAN MALAYSIA 2012**



**ANJURAN
MAJLIS PENGETUA
SEKOLAH MALAYSIA
(CAWANGAN PERLIS)**

PHYSICS

4531/2

Kertas 2

Ogos

2 $\frac{1}{2}$ jam

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dibenarkan menjawab keseluruhan soalan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
4. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini*

Untuk Kegunaan Pemeriksa			
Bahagian	Soalan	Markah Penuh	Markah Diperoleh
A	1	4	
	2	5	
	3	6	
	4	7	
	5	8	
	6	8	
	7	10	
	8	12	
B	9	20	
	10	20	
C	11	20	
	12	20	
Jumlah			

Kertas soalan ini mengandungi 30 halaman bercetak

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

1. $a = \frac{v - u}{t}$
2. $v^2 = u^2 + 2as$
3. $s = ut + \frac{1}{2}at^2$
4. Momentum = mv
5. $F = ma$
6. **Kinetic energy / Tenaga kinetik** = $\frac{1}{2}mv^2$
7. **Gravitational potential energy / Tenaga keupayaan graviti** = mgh
8. **Elastic potential energy / Tenaga keupayaan kenyal** = $\frac{1}{2}Fx$
9. $P = \frac{m}{V}$
10. **Pressure / Tekanan**, $P = h\rho g$
11. **Pressure / Tekanan**, $p = \frac{F}{A}$
12. **Heat / Haba**, $Q = mc\theta$
13. **Heat / Haba**, $Q = ml$
14. $\frac{pV}{T} = \text{constant / pemalar}$
15. $S = mc^2$
16. $v = f\lambda$
17. Power, $P = \frac{\text{energy}}{\text{time}}$
18. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
19. $\lambda = \frac{ax}{D}$
20. $n = \frac{\sin i}{\sin r}$
21. $n = \frac{\text{real depth}}{\text{apparent depth}}$
22. $Q = It$
23. $V = IR$
24. **Power / Kuasa**, $P = IV$
25. $\frac{N_S}{N_P} = \frac{V_S}{V_P}$
26. **Efficiency / Kecekapan** = $\frac{i_S V_S}{i_P V_P} \times 100\%$
27. $g = 10 \text{ ms}^{-2}$

Section A
Bahagian A
[60 marks/markah]

Answer **all** questions in this section.
Jawab semua soalan dalam bahagian ini

- 1 (a) Diagram 1.1 shows the volume a liquid P being measured. Mark [✓] to show the correct eye level
Rajah 1.1 menunjukkan isipadu cecair P sedang disukat. Tanda [✓] pada kedudukan mata yang betul

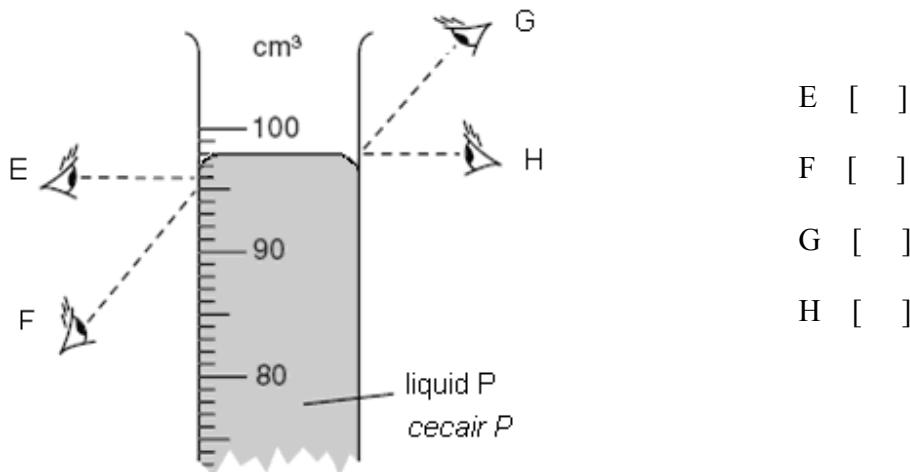
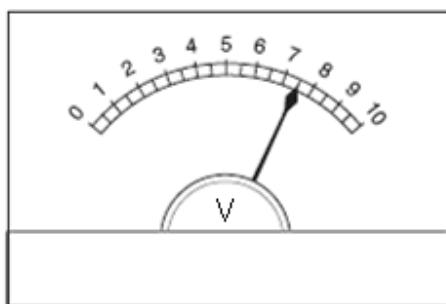


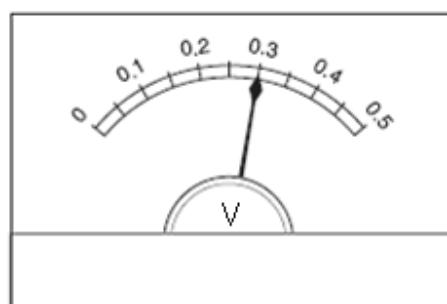
Diagram 1.1
Rajah 1.1

[1 mark / markah]

- (b) Diagram 1.2 shows voltmeter A and B.
Rajah 1.2 menunjukkan voltmeter A dan B



Voltmeter A



Voltmeter B

Diagram 1.2
Rajah 1.2

- (i) Which voltmeter is more sensitive?
Voltmeter yang manakah lebih peka?

..... [1 mark / markah]

- (ii) Give reason for your answer in b(i)
Nyatakan sebab untuk jawapan b(i)

.....

.....

[1 mark / markah]

- (c) State the differences between voltmeter and ammeter.
Nyatakan perbezaan antara voltmeter dan ammeter.

.....

.....

[1 mark / markah]

- 2 (a) Polonium-216 ($^{216}\text{Po}_{84}$) is an isotope that emits alpha particles
Polonium-216 ialah isotop yang memancarkan zarah alpha

- (i) What is the composition of an alpha particle
Apakah komposisi zarah alpha

.....

[1 mark / markah]

- (ii) People carrying out experiments with polonium-216 are given several rules which include: “Keep the source at least 10cm away from any part of your body”. Explain the reason(s) for this rule.

*Pekerja yang menjalankan eksperimen menggunakan polonium-216 diberi beberapa peraturan termasuk “Punca radiaktif hendaklah sentiasa 10cm dari badan”
 Terangkan sebab(sebab-sebab) diadakan peraturan ini.*

.....

[1 mark / markah]

- (iii) What happens to the nucleus of Polonium-216 that undergoes radioactive decay?
Apakah yang berlaku kepada nukleus Polonium-216 yang sudah mengalami reputan?

.....

[1 mark / markah]

- (b) Strontium-90 has a half life of 28 years. How long before its activity falls to $\frac{1}{4}$ of its original value?

Separuh hayat Strontium-90 ialah 28 tahun. Berapa lamakah masa yang diambil supaya aktivitinya tinggal $\frac{1}{4}$ daripada aktiviti asal?

Time / Masa =.....

[2 marks / markah]

- 3 Diagram. 3.1 shows the path of a ping pong ball which falls in a glass tube and rebounce back from ground.

Rajah 3.1 menunjukkan laluan sebiji bola ping pong yang jatuh dalam tiub kaca dan melantun dari permukaan ke atas.

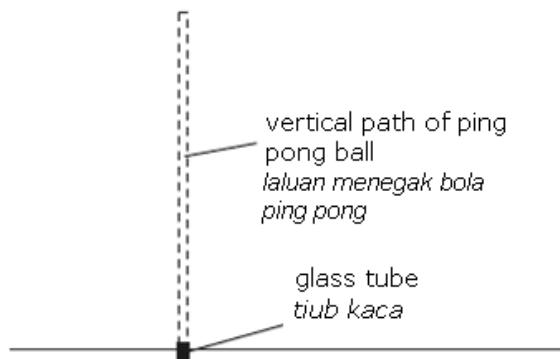


Diagram 3.1
Rajah 3.1

Diagram 2.2 is a graph of velocity against time for the ping pong ball
Rajah 2.2 ialah graf halaju melawan masa untuk bola ping pong tersebut.

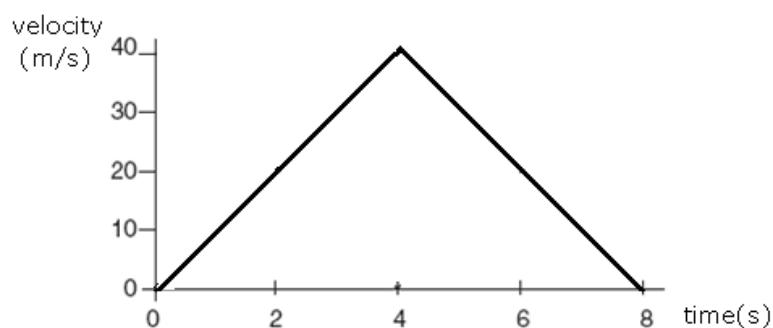


Diagram 3.2
Rajah 3.2

- (a) Describe the movement of the ball in the first 4second.
Terangkan gerakan bola semasa 4 saat pertama.

.....
.....
.....

[2 marks / markah]

- (b) Use Diagram. 3.2 to find
Menggunakan Rajah 3.2 tentukan

- (i) the velocity of the ball as it starts to fall
Halaju bola semasa mula jatuh,

Velocity / halaju =

[1 mark / markah]

- (ii) the time when the velocity is maximum.
Masa semasa ia mencapai halaju maksimum.

Time / masa =.....

[1 mark / markah]

- (c) Use values from Diagram 3.2 to calculate the acceleration of the ball as it bounce back from the ground. Show your working.

Daripada rajah 3.2 hitung pecutan bola semasa ia melantun semula keatas. Tunjukkan cara kerja anda.

acceleration / pecutan =(m/s/s)

[2 marks / markah]

- 4 (a) Diagram 4.1 shows a tube dipped into a beaker of water. Water has been drawn up the tube by a pump.

Rajah 4.1 menunjukkan satu tiub dicelup dalam bikar berisi air. Air telah disedut naik menggunakan pam.

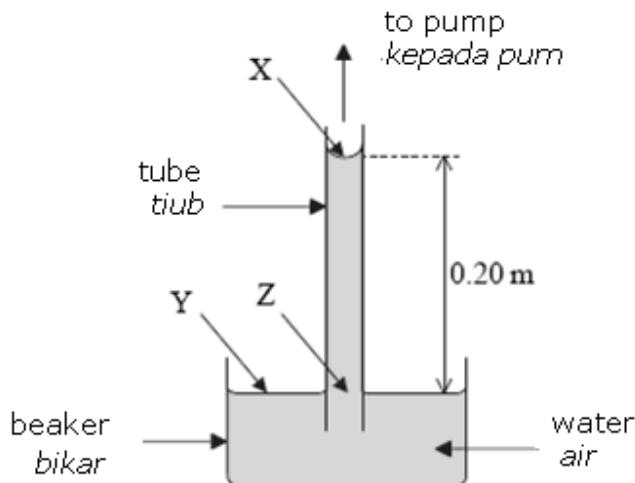


Diagram 4.1

Rajah 4.1

- (i) Three points are labelled X, Y and Z. Which point or points is at atmospheric pressure?
Tiga titik telah dilabel X, Y, Z. Titik (atau titik-titik) manakah pada tekanan atmosfera?

.....
[1 mark / markah]

- (ii) What is the pressure due to the column of water XZ?
(Density of water = 1000 kg/m^3)
Hitungkan tekanan disebabkan oleh turus air XZ?
(Ketumpatan air = 1000 kg/m^3)

Pressure / tekanan =

[2 marks / markah]

- (b) Diagram 4.2 shows a reservoir that stores water
Rajah 4.2 menunjukkan empangan simpanan air

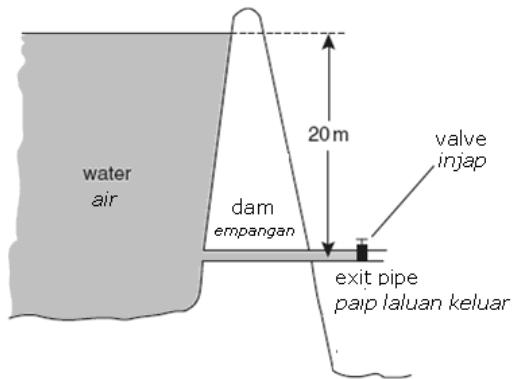


Diagram 4.2
Rajah 4.2

- (i) Give reason why the dam is wider at the base.

Berikan sebab mengapa empangan tersebut lebar di bahagian tapak.

.....
.....

[1 mark / markah]

- (ii) The valve is then opened and water, from the surface of the reservoir, flows out of the exit pipe. State the energy transformation of this water between the surface of the reservoir and the open end of the pipe.

*Bila injap dibuka, air dari permukaan empangan akan mengalir keluar melalui paip.
Nyatakan perubahan tenaga dari permukaan air ke hujung paip.*

.....
.....

[1 mark / markah]

- (iii) When the valve is opened, water will flows out. Calculate the velocity of the water.
Apabila injap dibuka, air akan memancut keluar. Hitungkan kelajuan air tersebut.

Velocity/ halaju =

[2 marks / markah]

- 5 (a) Kinetic energy of mercury atoms is zero as temperature drops to near absolute zero.
Tenaga kinetik atom Merkuri adalah kosong apabila suhu mendekati sifar mutlak.

- (i) What is absolute zero?
Apakah sifar mutlak?

.....

[1 mark / markah]

- (b) Diagram 5.1 shows a sealed box at room temperature.
Rajah 5.1 menunjukkan satu kotak yang tertutup dan kedap berada pada suhu bilik.

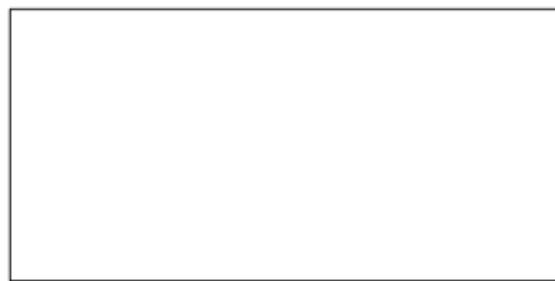


Diagram 5.1
Rajah 5.1

- (i) The box contains a large number of air molecules. On Diagram 5.1, draw a possible path of one of the air molecules, as it moves inside the box.

Kotak itu mengandungi banyak molekul udara. Pada rajah 5.1, lukis laluan yang mungkin dibuat oleh satu molekul udara dalam kotak itu.

[1 mark / markah]

- (ii) Explain how air molecules in the box create a pressure on the inside walls,
Terangkan bagaimana molekul udara menyebabkan tekanan pada diding dalam kotak.

.....

[2 marks / markah]

- (iii) Why this pressure rises as the temperature of the air in the box increases.
Mengapakah tekanan dalam kotak meningkat apabila suhu meningkat?
-
.....

[1 mark / markah]

- (c) Air in a cylinder is compressed slowly, so that the temperature does not rise. The pressure changes from 2.0×10^5 Pa to 5.0×10^5 Pa. The original volume was 0.35m^3 . Calculate the new volume.

Udara dalam satu silinder dimampatkan perlahan-lahan supaya suhunya tidak meningkat. Tekanan udara meningkat dari 2.0×10^5 Pa kepada 5.0×10^5 Pa. Isipadu asal ialah 0.35 m^3 . Hitungkan isipadu baru.

Volume/ isipadu =

[3 marks / markah]

- 6 (a) Diagram 6.1 shows a circuit to study electromagnet.
Rajah 6.1 menunjukkan satu litar untuk menyat elektromagnet.

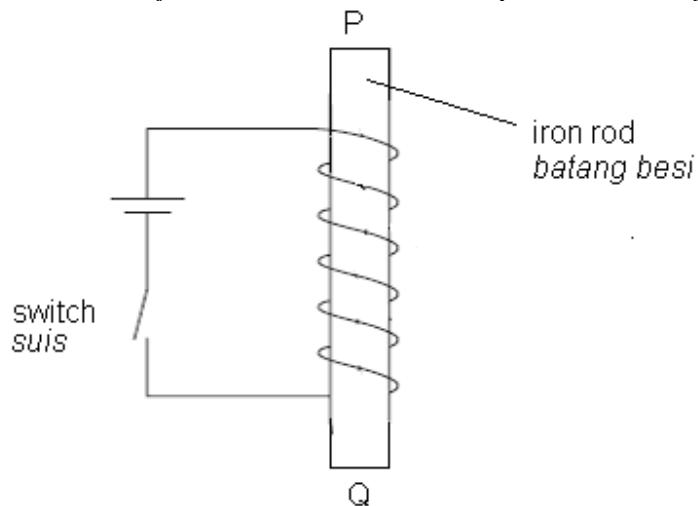


Diagram 6.1
Rajah 6.1

- (i) What is an electromagnet?
Apakah elektromagnet ?

.....
.....

[1 mark / markah]

- (ii) State the magnetic pole of P and Q when switch is closed,
Nyatakan kutub P dan Q apabila suis ditutup.

P

Q.....

[1 mark / markah]

- (b) Diagram 6.2 shows a relay in a simple circuit. It is used to light up lamp.
Rajah 6.2 menunjukkan geganti dalam litar digunakan untuk menyalaikan lampu

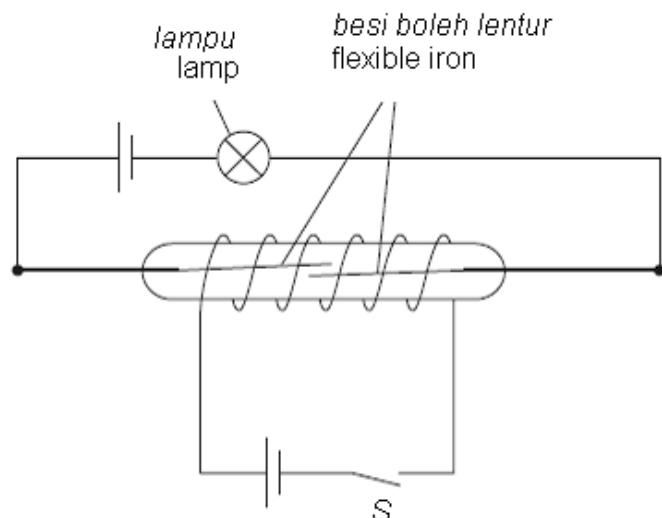


Diagram 6.2
Rajah 6.2

Diagram 6.3 shows the same relay circuit with switch S closed.
Rajah 6.3 menunjukkan litar yang sama dengan suis S tertutup.

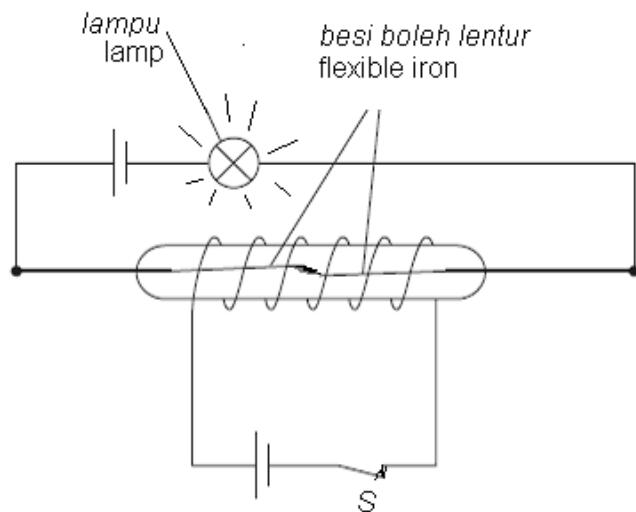


Diagram 6.3
Rajah 6.3

From Diagram 6.2 and 6.3
Berdasarkan rajah 6.2 dan 6.3,

- (i) Compare the state of flexible irons.
Bandingkan keadaan besi-besi mudah lentur
-
.....

[1 mark / markah]

- (ii) Compare the lamp
Bandingkan nyalaan lampu
-
.....

[1 mark / markah]

- (iii) State relationship between the flexible irons, the lamps and switch S
Nyatakan hubungan antara besi mudah lentur, nyalaan lampu dan suis S
-
.....

[1 mark / markah]

[Lihat sebelah
 SULIT]

- (c) Diagram 6.4 shows a simple a.c. generator. An insulated copper coil rotates clockwise between opposite magnetic poles.

Rajah 6.4 menunjukkan a.c. generator. Gegelung kuprum bertebat berputar antara dua kutub magnet.

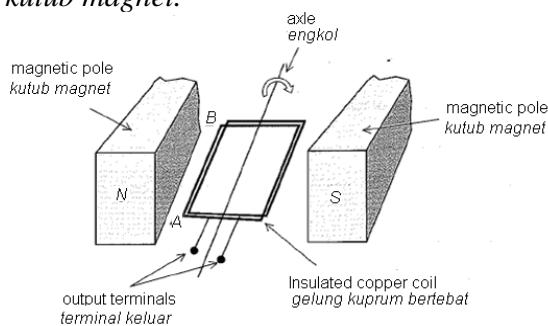


Diagram 6.4

Rajah 6.4

When the coil reaches the position shown, induced current moves from A to B.
Semasa gegelung pada kedudukan tersebut, arus aruhan mengalir dari A ke B.

- (i) When the coil has rotated through 180° , in what direction will the current move in side AB of the coil?

Apabila gegelung berputar 180° , nyatakan arah arus aruhan yang mengalir pada sisi gelung AB?

.....
.....

[1 mark / markah]

- (ii) Give a reason for your answer
Nyatakan sebab anda

.....
.....

[1 mark / markah]

- (iii) Suggest a modification to increase the magnitude of induced current
Cadangkan satu pengubahsuaian untuk meningkatkan magnitude arus aruhan?

.....
.....

[1 mark / markah]
[Lihat sebelah
SULIT]

- 7 A burglar alarm operates using three switches. Switches A and B are fitted to two separate doors and switch M is the master switch. When a door is opened or the master switch is turned on, it causes the input to logic to be “1”. The circuit diagram is as shown in Diagram 7.

Pengera kecurian beroperasi dengan menggunakan tiga suis. Suis A dan B dipasang pada dua pintu yang berasingan dan suis M adalah suis induk. Apabila satu pintu dibuka atau suis induk dihidupkan, ia menyebabkan input pada logik menjadi “1”. Rajah sirkit ditunjukkan pada Rajah

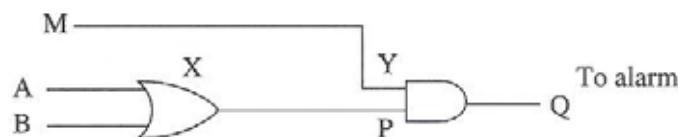


Diagram 7
Rajah 7

- a) i) Identify the gates X and Y.

Nyatakan get X dan Y.

[2 marks / markah]

- ii) Complete the truth table below.

Lengkapkan jadual kebenaran di bawah.

	Input				Output
Row/Baris	A	B	M	P	Q
I	0	0	1		
II	1	0	1		
III	0	1	0		
IV	1	1	0		

[4 marks / markah]

- b) Which row in the truth table indicates something happened when the master switch is turned on and the doors are closed?

Baris manakah di dalam jadual kebenaran menunjukkan sesuatu berlaku apabila suis induk dihidupkan dan pintu-pintu ditutup?

[1 mark / 1 markah]

- c) Which row indicates something happened when a door is opened while the master switch is turned off?

Baris manakah menunjukkan sesuatu berlaku apabila sebuah pintu dibuka manakala suis induk dimatikan?

.....
.....
.....
.....

[1 mark / 1 markah]

- d) State what is set for the alarm to sound?

Nyatakan apakah yang perlu ditetapkan pada pintu dan suis induk supaya pengera berbunyi?

.....
.....

[2 marks / 2 markah]

- 8 a) Diagram 8 show a clear inverted image is obtained on the screen when a lens is used in an experiment

Rajah 8 menunjukkan imej sonsang terbentuk dengan jelas pada skrin apabila satu kanta cembung digunakan dalam satu eksperimen

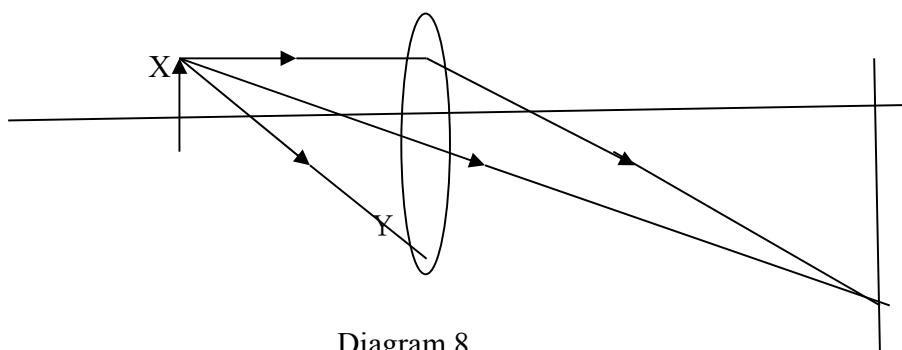


Diagram 8
Rajah 8

- i) State another 2 characteristics of the image form on the screen.

Nyatakan 2 lagi ciri imej yang terbentuk pada skrin

.....
.....

[2 marks / markah]

- ii) Complete the ray XY to the screen

Lengkapkan sinar cahaya XY sehingga ia sampai ke skrin

[1 marks / markah]

[Lihat sebelah
SULIT]

- iii) What will happen to the image if part of the lens is covered by a book as shown in the diagram 8.1. Explain your answer.

Apakah akan terjadi kepada imej tersebut sekiranya sebahagian daripada kanta itu ditutup oleh buku. Jelaskan jawapan anda.

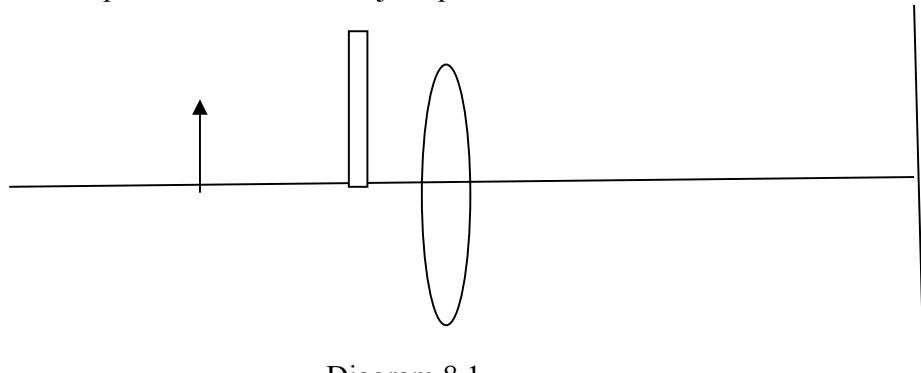


Diagram 8.1
Rajah 8.1

[2 marks / markah]

- b) You are given 2 lens L_1 and L_2 . Power of each lens is 10 D and 20 D respectively. The two lenses are arranged in such a position that it can be used as a compound microscope. The arrangement is shown in diagram 8.2

Anda dibekalkan 2 kanta L_1 dan L_2 . Kuasa setiap kanta ialah masing-masing 10 D dan 20 D. Kedua-dua kanta disusun supaya membentuk mikroskop majmuk. Susunan kanta adalah seperti dalam rajah 8.2

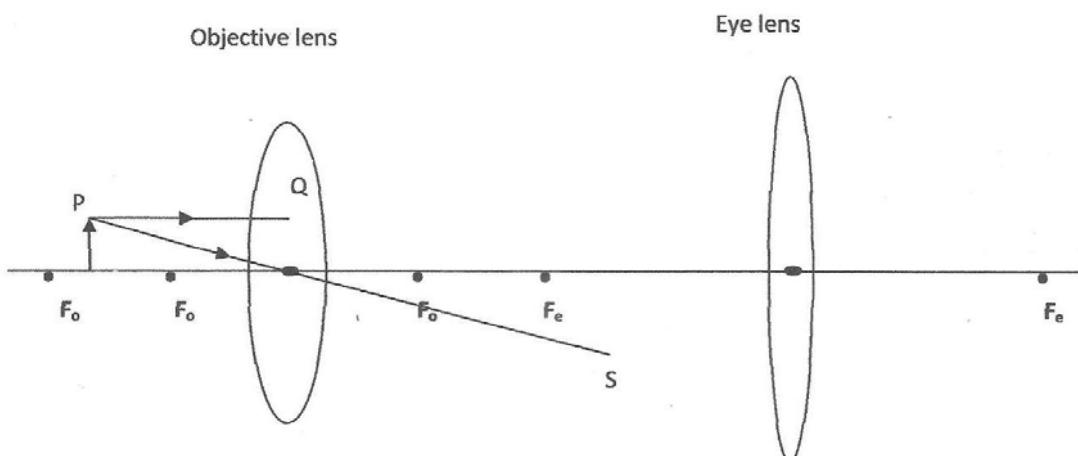


Diagram 8.2
Rajah 8.2

L_2

[Lihat sebelah
SULIT

- i) What is the focal length of lens?
Apakah kuasa kanta

L_1 :

L_2 :

- ii) Complete the ray diagram PQ and PS in the diagram 8.2 until an inverted virtual image is obtained.
Lengkapkan rajah sinar PQ dan PS di dalam rajah 8.2 sehingga satu imej yang maya dan sonsang diperolehi.

[3 marks / markah]

- iv) Given that the height of the object is 1 cm and is position at 6 cm from the lens , find the height of the image at S.
Di beri tinggi objek di atas adalah 1 cm dan diletakkan 6 cm daripada kanta , tentukan tinggi imej yang terbentuk di S.

[2 marks / markah]

Section B
Bahagian B
[20 marks/markah]

Answer any **one** question from this section.
Jawab mana-mana satu soalan daripada bahagian ini

- 9 Figure 9.1 show water flow from a river in a remote place. Figure 9.2 show area of sea close to the river. The temperature of the water in the river is 18°C while the temperature of sea water is 26°C
Rajah 9.1 menunjukkan aliran air sungai di kawasan pendalam sementara rajah 9.2 menunjukkan kawasan laut berhampiran muara sungai tersebut. Didapati bahawa suhu air sungai itu berada pada 18°C sementara suhu air laut pada masa yang sama ialah 26°C



Figure 9.1/ *Rajah 9.1*



Figure 9.2/ *Rajah 9.2*

- What is the meaning of temperature
Apakah yang dimaksudkan dengan suhu
[1 mark / markah]
- Observe figure 9.1 and 9.2, compare the quantity of water and the ratio of land area to water. Relate the quantity of water and the ratio of land area to water with water temperature to deduce a relevant physics concept
Perhatikan rajah 9.1 dan 9.2, bandingkan kuantiti air dan nisbah keluasan daratan kepada air. Hubungkaitkan kuantiti air dan nisbah keluasan daratan kepada air dengan suhu air untuk membuat kesimpulan tentang satu konsep fizik yang sesuai.
[5 marks / marks]
- Explain why water obtain from well in a remote village is cooler than water in a lake
Huraikan bagaimanakah air pergi di kawasan pendalam mempunyai suhu yang lebih rendah daripada air di dalam sebuah tasik.
[4 marks / markah]



Figure 9.3/Rajah 9.3

Figure 9.3 show the sketch of a bungalow. You are required to give some suggestion to build a bungalow which is very cool and comfortable without having to use any air-condition unit. Explain your suggestion base on your knowledge on the following aspects. *Rajah 9.3 menunjukkan lakaran sebuah bunglow. Anda dikehendaki untuk memberikan beberapa cadangan untuk mebina sebuah bunglow yang sejuk dan selesa tanpa menggunakan alat penghawa dingin. Terangkan cadangan anda berasaskan kepada pengetahuan anda tentang aspek-aspek berikut.*

- i. Location of the house

Lokasi yang sesuai

- ii. Design of the house

Rekabentuk rumah

- iii. Specific heat capacity of the material use

Muatan haba tentu bahan yang digunakan

- iv. Colour of the house

Warna rumah

[10 marks]

[10 markah]

- 10 (a) The lamps in a house are connected to the main supply. Diagram 10 shows 3 bulbs are connected to a switch and 2 dry cell of 1.5 V each.

Lampu yang dipasang di rumah disambung kepada bekalan kuasa.

Rajah 10 menunjukkan 3 mentol disambung ke satu suis dan dua sel kering yang masing-masing 1.5 V.

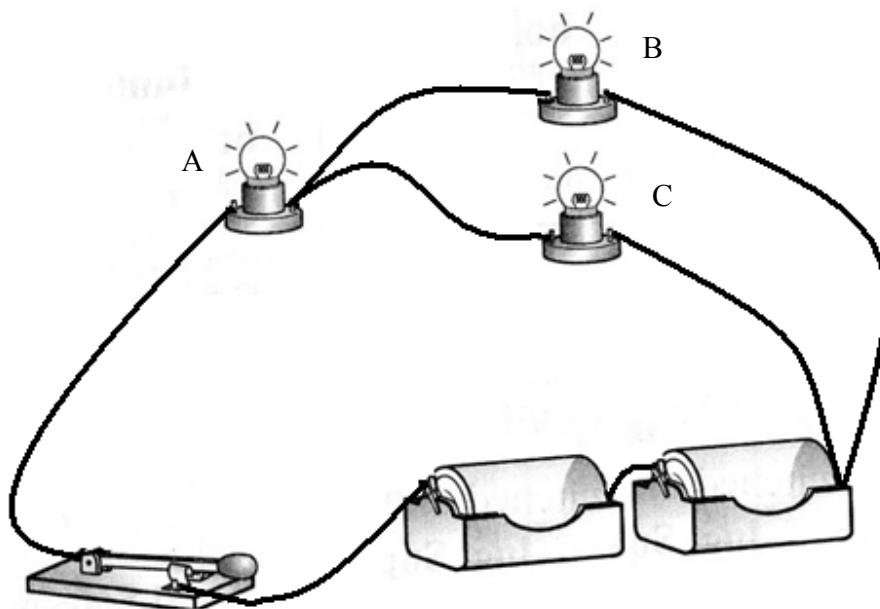


Diagram 10/Rajah 10

- i) Based on Diagram 10, draw the electric circuit diagram in your answer sheet.

Berdasarkan Rajah 10, lukis rajah litar elektrik di kertas jawapan anda.

[3 marks / markah]

- ii) Bulb B and C is labelled 1.5V, 3W. What is meant by “1.5V, 3W”?

Mentol B dan C itu berlabel 1.5V, 3W. Apakah yang dimaksudkan dengan “1.5V, 3W”

[2 marks / markah]

- iii) Compare the brightness of bulb B and bulb C, when the switch is on.

Bandingkan kecerahan mentol B dan mentol C apabila suis dihidupkan?

[1 mark / markah]

- iv) Determine the power of bulb A if all the bulb light up with normal brightness when the switch is on?

Hitungkan kuasa mentol A sekiranya semua mentol menyala dengan kecerahan normal apabila suis dihidupkan?

[2 marks / markah]

- v) Calculate the energy consumed by the three bulbs if they are switched on for 1 hour.

Kirakan tenaga yang digunakan oleh kedua-dua mentol itu jika dihidupkan selama 1 jam

[2 marks / markah]

- (b) As an engineer you are given the task of determine the type of wire that is suitable to be used for connecting electric devices in a house.

Sebagai seorang jurutera anda diberikan tugas untuk menentukan jenis dawai yang sesuai digunakan sebagai dawai penyambung di dalam sebuah rumah.

Explain the suitability of the following aspect of the wire.

Terangkan kesesuaian dawai itu dalam aspek berikut.

- i) resistance of wire

rintangan dawai

- ii) melting point of wire

takat lebur dawai

- iii) density of wire

ketumpatan dawai

- iv) rate of rusting of wire

kadar pengaratan dawai

- v) rate of expansion of wire

kadar pengembangan dawai

[10 marks / markah]

Section C
Bahagian C
[20 marks / 20 markah]

Answer any **one** question from this section.
Jawab mana-mana satu soalan daripada bahagian ini.

- 11 Diagram 11.1 shows the structure of an optical fibre used for telecommunications.
Rajah 11.1 menunjukkan struktur gentian optik yang digunakan untuk telekomunikasi.

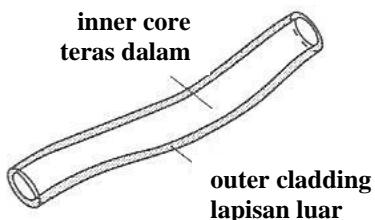


Diagram 11.1 / Rajah 11.1

Optical fibres are made of fine strand of glass. Each single glass fibre (inner core) is coated with a thin layer of other types of glass (outer cladding).

Gentian optik diperbuat daripada kaca halus. Setiap gentian kaca tunggal (teras dalam) disalut dengan lapisan nipis jenis kaca yang lain (lapisan luar).

Rays of light entering one end of the fibre experience repeated total internal reflection until they emerge at other end of the fibre.

Sinar cahaya memasuki satu hujung gentian dan menyebabkan pantulan dalam penuh berulang sehingga ia muncul pada hujung yang lain gentian itu.

Table 11.1 shows the characteristics of five types of glass which can be used to make the inner core of an optical fibre.

Jadual 11.1 menunjukkan ciri-ciri bagi lima jenis kaca yang boleh digunakan untuk menghasilkan teras dalam bagi gentian optik.

Type of glass <i>Jenis kaca</i>	Characteristic			
	<i>Ciri-ciri</i>			
Refractive index, n <i>Indeks pembiasan, n</i>	Density <i>Ketumpatan</i> (kg m ⁻³)	Purity <i>Ketulenan</i>	Strength and flexibility <i>Kekuatan dan fleksibiliti</i>	

J	1.62	2400	Pure <i>Tulen</i>	Strong and rigid <i>Kuat dan tegar</i>
K	1.59	2300	Pure <i>Tulen</i>	Strong but flexible <i>Kuat tetapi fleksibel</i>
L	1.45	2450	Contains impurity <i>Mengandungi bendasing</i>	Strong but flexible <i>Kuat tetapi fleksibel</i>
M	1.37	2500	Contains impurity <i>Mengandungi bendasing</i>	Brittle <i>Rapuh</i>
N	1.20	3000	Pure <i>Tulen</i>	Strong and rigid <i>Kuat dan tegar</i>

Table 11.1 / Jadual 11.1

(a) (i) What is meant by refractive index?

Apakah yang dimaksudkan dengan indeks pembiasan?

[1 mark / 1 markah]

(ii) You are asked to investigate the characteristics of the types of glass in Table 11.1 which could be used to make the inner core of the optical fibre as in Figure 11.1.

Anda ditugaskan untuk mengkaji ciri-ciri jenis kaca di dalam Jadual 11.1 yang boleh digunakan untuk menghasilkan teras dalam bagi gentian optik seperti Rajah 11.1.

Explain the suitability of **each** characteristic in Table 11.1 and hence, determine which type of glass is most suitable to be used to make the inner core of the optical fibre. Justify your choice.

Terangkan kesesuaian setiap jenis kaca dalam Jadual 11.1 dan tentukan jenis kaca manakah yang paling sesuai digunakan untuk menghasilkan teras dalam bagi gentian optik. Beri sebab untuk pilihan anda.

[10 marks / 10 markah]

- (b) Diagram 11.2 shows the paths of a light ray through part of an optical fibre.

Rajah 11.2 menunjukkan laluan sinar cahaya melalui sebahagian daripada gentian optik.



Diagram 11.2 / Rajah 11.2

Explain, how the light ray is propagated from one end to the other through the optical fibre.
Terangkan bagaimana sinar cahaya disebarluaskan dari satu hujung ke hujung yang lain melalui gentian optik.

[3 marks / 3 markah]

- (c) The light in the optical fibre has a wavelength of 3.2×10^{-7} m and is travelling at a speed of 1.9×10^8 m s⁻¹.

Cahaya di dalam gentian optik mempunyai panjang gelombang 3.2×10^{-7} m dan bergerak pada kelajuan 1.9×10^8 m s⁻¹.

- (i) Calculate the frequency of the light.

Hitung frekuensi cahaya tersebut.

[2 marks / 2 markah]

- (ii) Calculate the refractive index of the material from which the fibre is made, given that the speed of light in air is 3.0×10^8 m s⁻¹.

Hitung indeks pembiasan bagi bahan yang menghasilkan gentian dan diberi kelajuan cahaya dalam udara adalah 3.0×10^8 m s⁻¹.

[2 marks / 2 markah]

- (d) Give two advantages of optical fibres rather than copper wires for carrying telephone communications.

Nyatakan dua kelebihan gentian optik berbanding wayar tembaga bagi penghantaran komunikasi menerusi telefon.

[2 marks / 2 markah]

- 12 Diagram 12.1 shows a boy walking at a distance in front of a pair of loudspeakers connected to an audio frequency generator. The boy will hear loud sounds and soft sounds as he walks along the line shown.

Rajah 12.1 menunjukkan seorang budak lelaki berjalan dari satu jarak di depan sepasang pembesar suara yang disambungkan pada penjana frekuensi audio. Dia akan mendengar bunyi kuat dan bunyi lemah ketika dia berjalan di sepanjang garis yang ditunjukkan.

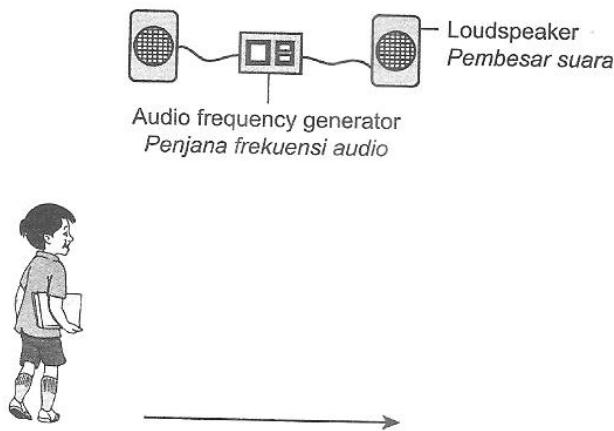


Diagram 12.1 / Rajah 12.1

- (a) State and explain the phenomenon observed.

Nyatakan dan terangkan fenomena yang diperhatikan.

[2 marks / 2 markah]

- (b) (i) Give **three** factors that increase the distance between the successive loud sounds.

Berikan tiga faktor yang menambahkan jarak antara dua bunyi kuat yang berturutan.
[3 marks / 3 markah]

- (ii) The boy heard four consecutive loud sounds at a distance of 6 m. Given the distance between the loudspeakers is 1.5 m and the distance of the boy from the loudspeakers is 8 m. Calculate the wavelength of the sound wave.

Budak lelaki itu mendengar empat turutan bunyi kuat pada jarak 6 m. Diberikan jarak antara dua pembesar suara ialah 1.5 m dan jarak budak lelaki itu dari pembesar suara ialah 8 m. Kirakan panjang gelombang untuk gelombang bunyi itu.

[2 marks / 2 markah]

- (c) Diagram 12.2 shows a harbor. The harbor is not safe for ships to anchor. A wall barrier needed to be built.

Rajah 12.2 menunjukkan sebuah pelabuhan. Pelabuhan itu tidak selamat untuk kapal-kapal berlabuh. Sebuah dinding penghalang perlu dibina.

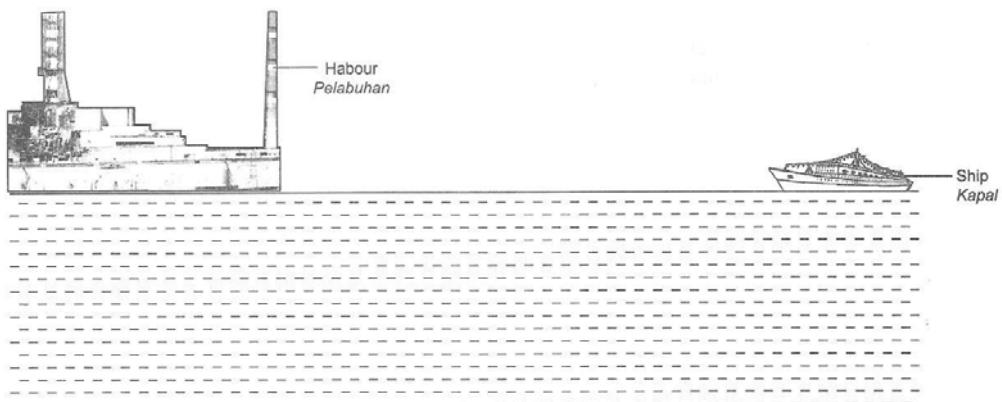


Diagram 12.2 / Rajah 12.2

Table 12 shows the characteristics for four models of wall barrier.

Jadual 12 menunjukkan ciri-ciri bagi empat model dinding penghalang.

Model <i>Model</i>	Shape of the wall barrier <i>Bentuk dinding penghalang</i>	Depth of the sea water at the harbor <i>Kedalaman air pada pelabuhan</i>	Gap between the wall barriers <i>Celah antara dinding penghalang</i>	Base of the wall barrier <i>Dasar dinding penghalang</i>
P		Shallow <i>Cetek</i>	None <i>Tiada</i>	Small <i>Kecil</i>

Q		Deep <i>Dalam</i>	Large <i>Besar</i>	Large <i>Besar</i>
R		Shallow <i>Cetek</i>	None <i>Tiada</i>	Small <i>Kecil</i>
Model <i>Model</i>	Shape of the wall barrier <i>Bentuk dinding penghalang</i>	Depth of the sea water at the harbor <i>Kedalaman air pada pelabuhan</i>	Gap between the wall barriers <i>Celah antara dinding penghalang</i>	Base of the wall barrier <i>Dasar dinding penghalang</i>
S		Deep <i>Dalam</i>	Small <i>Kecil</i>	Large <i>Besar</i>

Table 12 / Jadual 12

Explain the suitability of characteristic in Table 12. Determine the most suitable model. Give reasons for your choice.

Terangkan kesesuaian setiap ciri di Jadual 12. Tentukan model yang paling sesuai. Beri sebab untuk pilihan anda.

[10 marks / 10 markah]

- (d) A ship transmits an ultrasonic wave of frequency 80 kHz to the seabed and receives an echo 0.05 s later. The speed of the ultrasonic wave in the water is 1500 m s^{-1} .

Sebuah kapal memancar gelombang ultrasonik dengan frekuensi 80 kHz ke dasar laut dan menerima pantulannya 0.05 s kemudian. Halaju gelombang ultrasonik dalam air ialah 1500 m s^{-1} .

Calculate:

Hitungkan:

- i) the depth of the sea
kedalaman laut
- ii) the wavelength of the ultrasonic wave in the water
panjang gelombang ultrasonik dalam air

[3 marks / 3 markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consist of **three** sections: **Section A, Section B and Section C.**
Kertas soalan ini mengandungi tiga bahagian: Bahagian A, Bahagian B dan Bahagian C.
2. Answer **all** questions in **Section A**. Write your answers for **Section A** in the spaces provided in the question paper.
Jawab semua soalan dalam Bahagian A. Jawapan anda bagi Bahagian A hendaklah ditulis pada ruang yang disediakan dalam kertas soalan ini.
3. Answer **one** question from **Section B** and **one** question from **Section C**.
 Write your answers for **Section B** and **Section C** on the extra answer sheets.
Jawab satu soalan daripada Bahagian B dan satu soalan daripada Bahagian C.
Jawapan anda bagi Bahagian B dan Bahagian C hendaklah ditulis dalam helaian tambahan.
4. Show your working, it may help you to get marks.
Tunjukkan kerja mengira, ini membantu anda mendapatkan markah.
5. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.
Jika anda hendak menukar sesuatu jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. A list of formulae is provided on page 3.
Satu senarai formula disediakan di halaman 3.
8. The marks allocated for each question or part question are shown in brckets.
Markah yang diperuntukkan bagi setiap soalan atau ceraian soalan ditunjukkan dalam kurungan.
9. You are advised to spend 90 minutes to answer questions in **Section A**, 30 minutes for **Section B** and 30 minutes for **Section C**.
Anda dinasihati supaya mengambil masa 90 minit untuk menjawab soalan dalam Bahagian A, 30 minit untuk Bahagian B dan 30 minit untuk Bahagian C.
10. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

NAMA	
TINGKATAN	

PEPERIKSAAN PERCUBAAN BERSAMA SIJIL PELAJARAN MALAYSIA 2012



**ANJURAN
MAJLIS PENGETUA
SEKOLAH MALAYSIA
(CAWANGAN PERLIS)**

PHYSICS

4531/3

Kertas 3

Ogos

$\frac{1}{2}$ jam

Satu jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Tulis Nama dan Tingkatan anda pada petak yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa*
3. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan soalan atau sebahagian soalan sama ada dalam Bahasa Inggeris atau Bahasa Melayu.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini*

<i>Untuk Kegunaan Pemeriksa</i>			
Bahagian	Soalan	Markah Penuh	Markah Diperoleh
A	1	16	
	2	12	
B	3	12	
	4	12	
Jumlah			

Kertas soalan ini mengandungi 15 halaman bercetak

Section A
Bahagian A

[28 marks]
[28 markah]

Answer **all** questions in this section.
Jawab semua soalan dalam bahagian ini.

- 1 A student carries out an experiment to investigate the relationship between mass, m , and the difference of height, h of the liquid. The arrangement of the apparatus is shown in Diagram 1.1.

Seorang pelajar menjalankan satu eksperimen untuk mengkaji hubungan antara jisim, m dan perbezaan tinggi, h , suatu cecair. Susunan radas ditunjukkan pada Rajah 1.1.

The total mass, m of the experiment is the sum of the slotted mass, m_1 , and the mass of piston, m_2 . [$m = m_1 + m_2$].

The mass of the piston in the experiment, $m_2 = 50.0$ g.

Jumlah jisim, m bagi eksperimen adalah hasil tambah jisim pemberat, m_1 dan jisim piston, m_2 . [$m = m_1 + m_2$]

Jisim piston bagi eksperimen, $m_2 = 50.0$ g

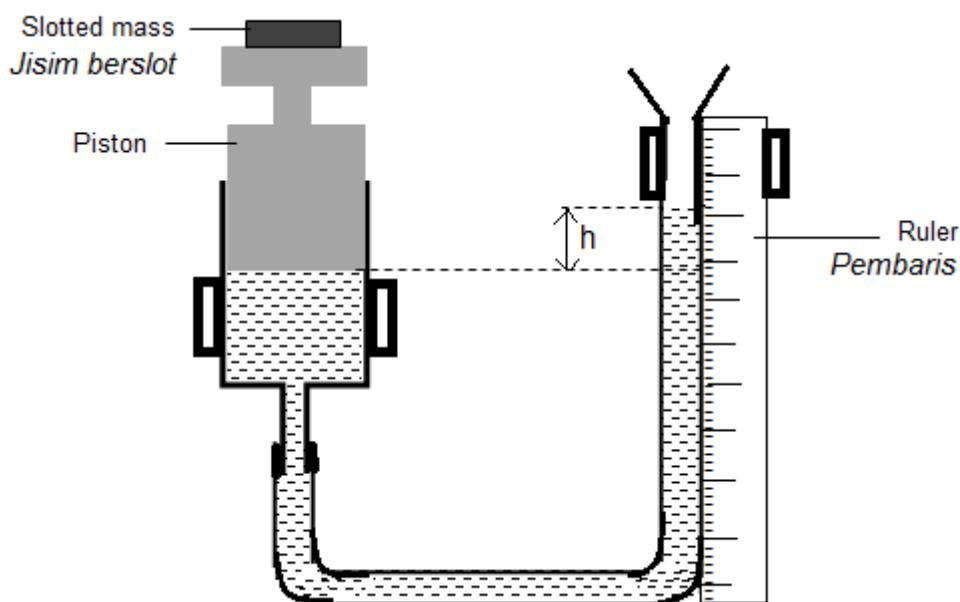


Diagram 1.1 / Rajah 1.1

A slotted mass, $m_1 = 50.0$ g is placed at the top of the piston and the difference in the height, h of the liquid is taken. The actual difference in the height, h is shown in Diagram 1.2.

Pemberat, $m_1 = 50.0$ g diletakkan di atas piston dan perbezaan ketinggian, h , bagi cecair diambil. Perbezaan tinggi sebenar ditunjukkan pada rajah 1.2 .

The above procedure is repeated by varying the values of m_1 , to be 100.0 g, 150.0 g,

200.0 g and 250.0 g. The actual differences in height of the liquid are shown in Diagram 1.3, 1.4, 1.5 and 1.6 respectively.

Prosedur di atas diulangi dengan mengubah nilai m_1 , menjadi 100.0 g, 150.0 g, 200.0 g dan 250.0 g. Perbezaan ketinggian sebenar cecair, h , masing-masing ditunjukkan pada Rajah 1.3, 1.4, 1.5 dan 1.6.

- (a) For the experiment described on pages 2, 3 and 4, identify:

Bagi eksperimen yang diterangkan di halaman 2, 3 dan 4, kenal pasti:

- (i) The manipulated variable

Pembolehubah dimanipulasikan

[1 mark/markah]

- (ii) The responding variables

Pembolehubah bergerakbalas

[1 mark/markah]

- (iii) The constant variable

Pembolehubah dimalarkan

[1 mark/markah]

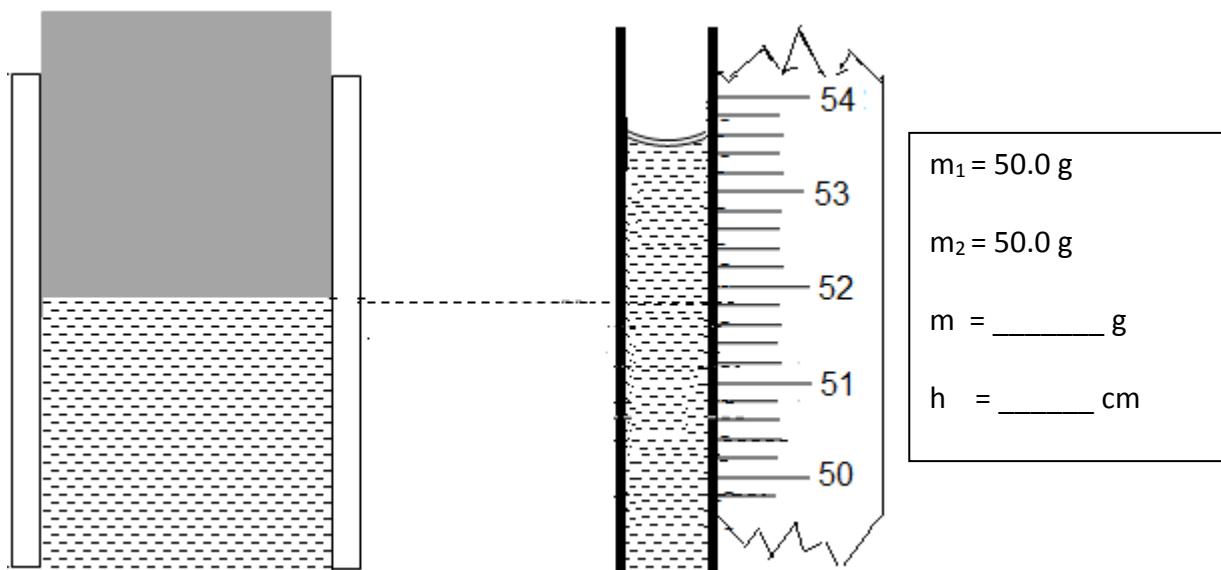


Diagram 1.2 /Rajah 1.2

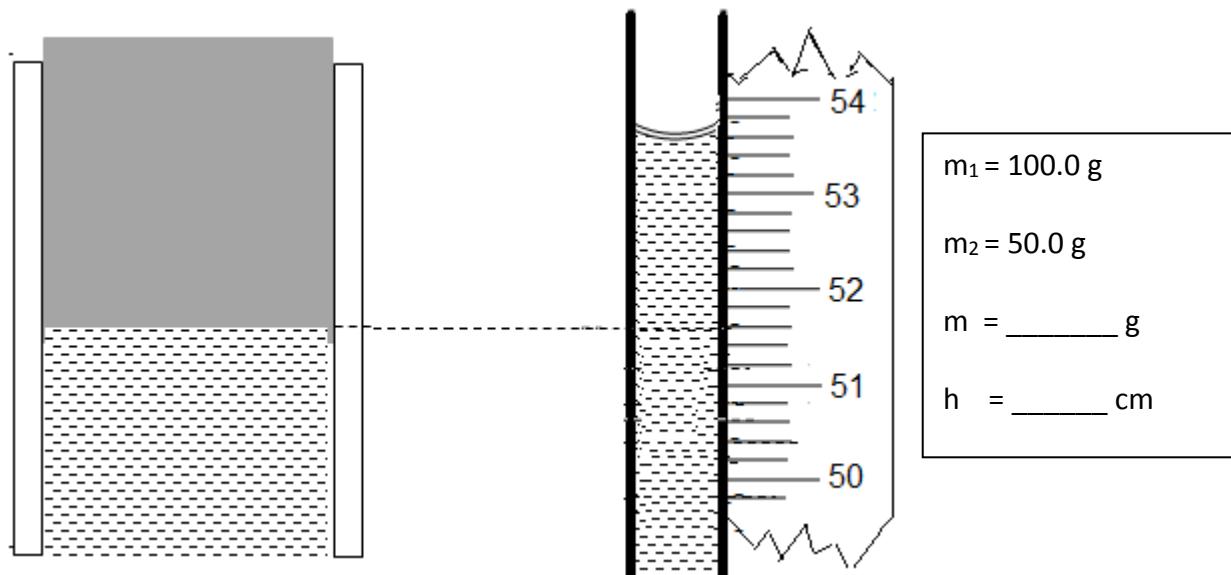


Diagram 1.3 /Rajah 1.3

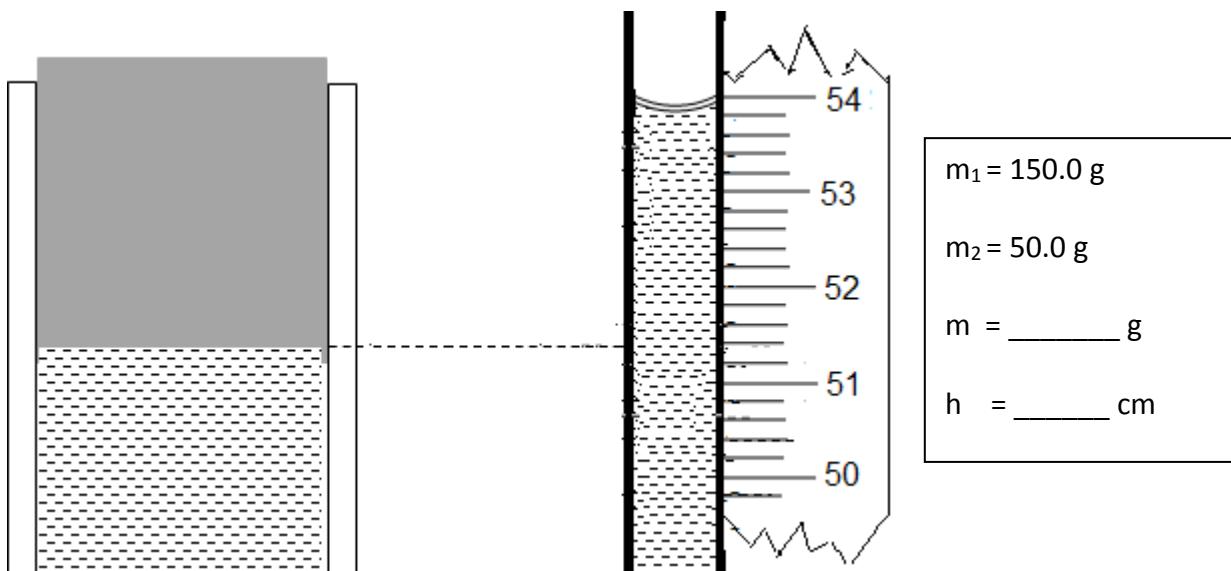


Diagram 1.4 /Rajah 1.4

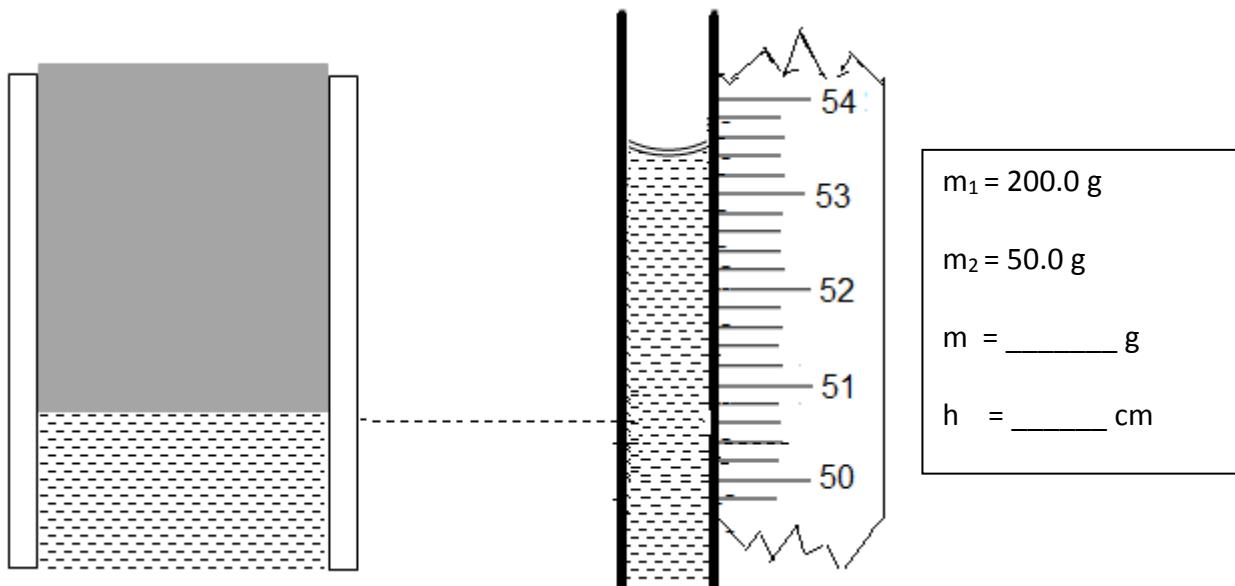


Diagram 1.5 /Rajah 1.5

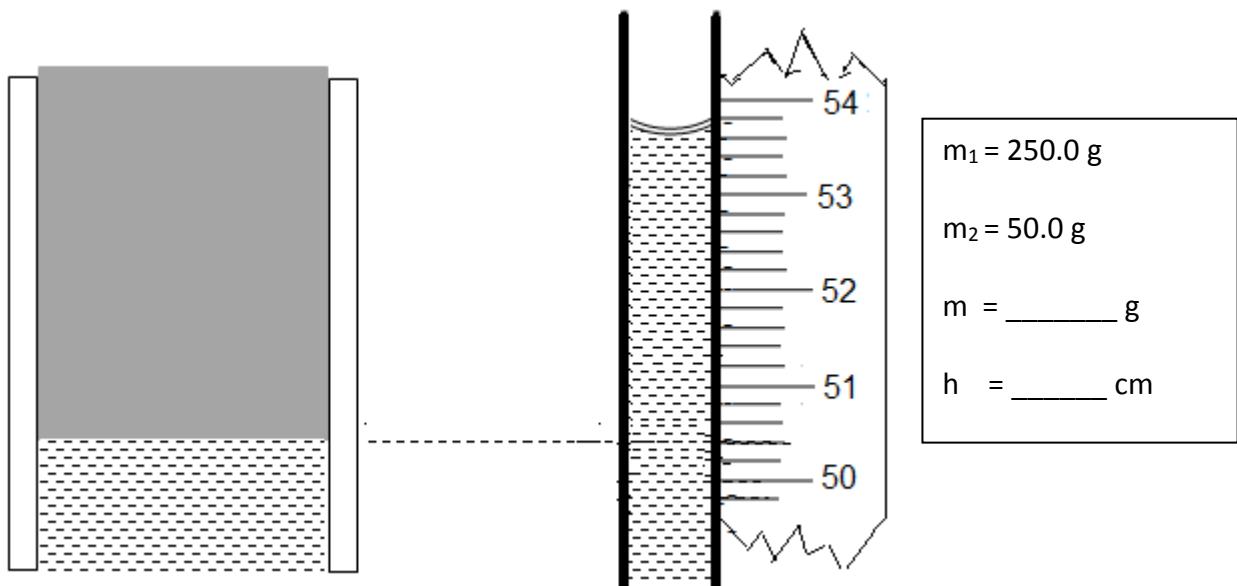


Diagram 1.6 /Rajah 1.6

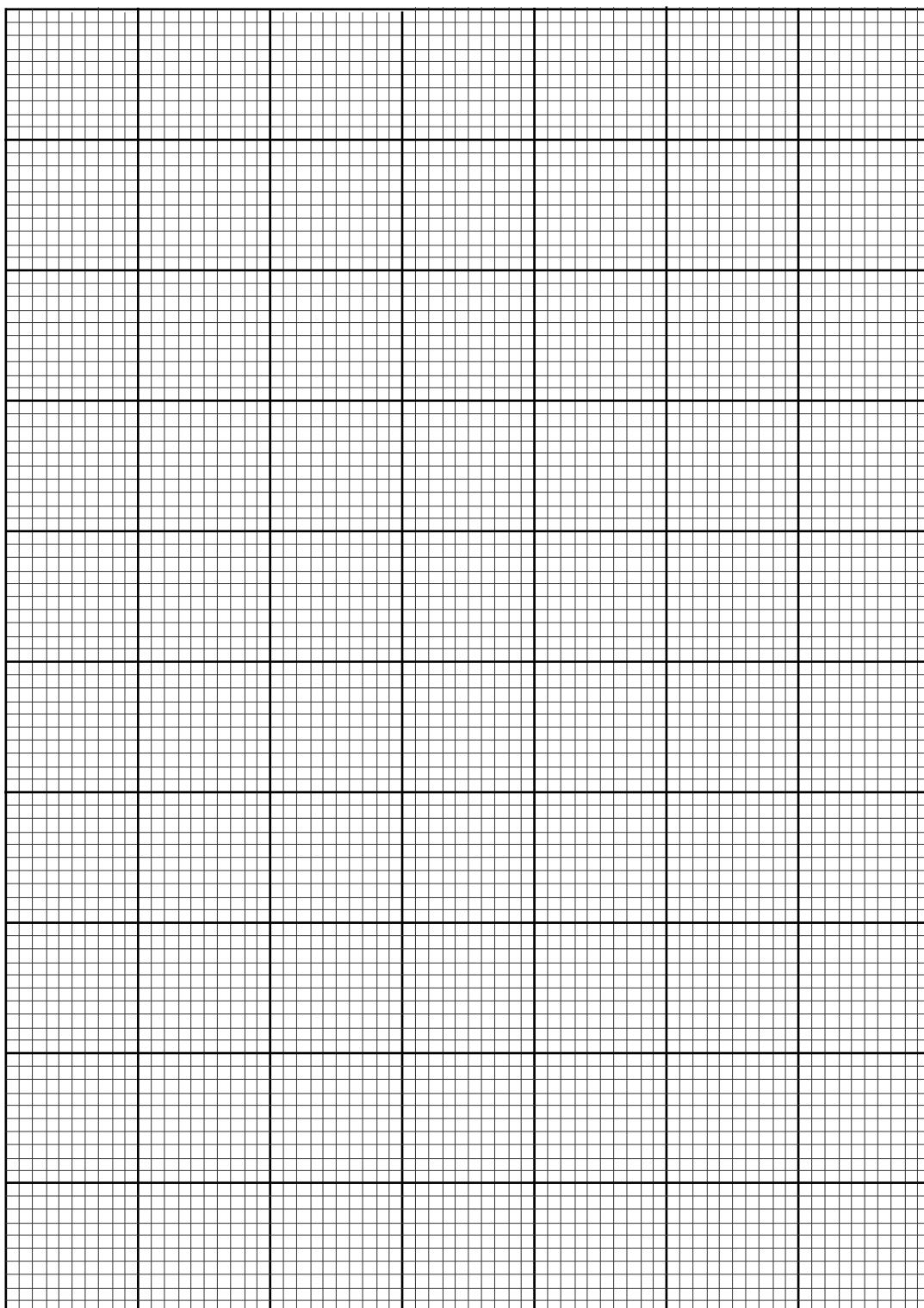
- (b) Determine h for every difference in height on Diagram 1.2, 1.3, 1.4, 1.5 and 1.6.
Tentukan h bagi setiap perbezaan ketinggian pada Rajah 1.2, 1.3, 1.4, 1.5 dan 1.6.

Tabulate your results for m and h for every value of m_1 in the space below.
Jadualkan keputusan anda bagi m dan h untuk setiap nilai m_1 pada ruang di bawah
[7 marks/markah]

- (c) On the graph paper on page 6, draw graph of h against m.
Pada kertas graf di halaman 6, lukiskan graf h melawan m. [5 marks/markah]
- (d) Use your graph in (c), to state the relationship between m and h.
Berdasarkan graf anda di (c), nyatakan hubungan antara m dan h.

[1 mark/markah]

Graph h against m
Graf h melawan m



- 2 A student carries out an experiment to investigate the relationship between the electromotive force , E and the internal resistance, r of a dry cell. The result of the experiment is shown in the graph potential difference ,V against electric current, I as in Diagram 2.1 .

Seorang murid sedang menjalankan satu eksperimen untuk mengkaji hubungan di antara daya gerak elektrik, E dan rintangan dalam, r untuk sebiji sel kering. Keputusan eksperimen ditunjukkan oleh graf beza keupayaan, V melawan arus elektrik, I seperti yang ditunjukkan dalam Rajah 2.1

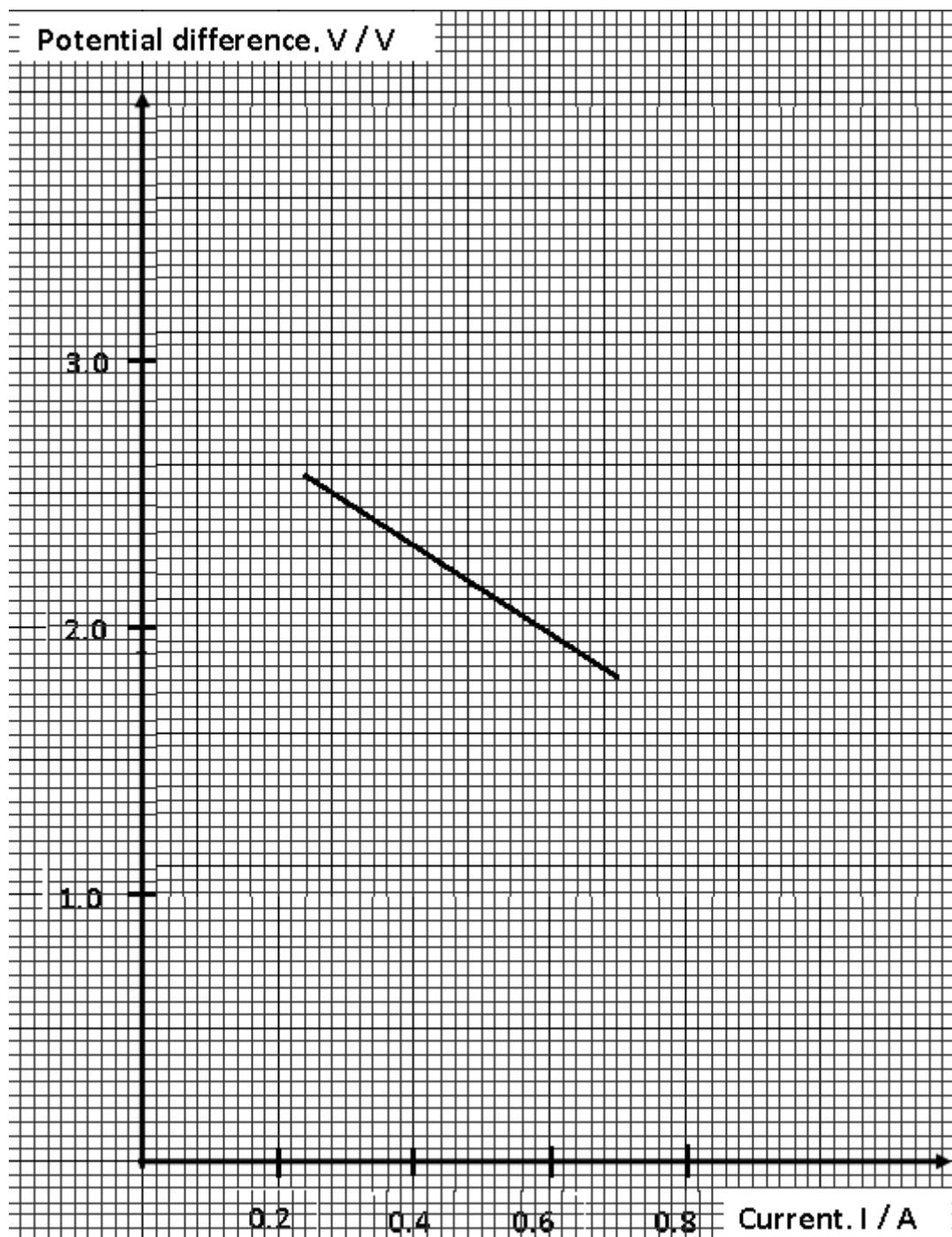


Diagram 2.1 / rajah 2.1

- (a) Based on the graph in Diagram 2.1
Berdasarkan graf pada rajah 2.1

- (i) What happen to V when I decrease?
Apakah yang berlaku kepada V apabila I berkurang?

.....

[1 mark/ markah]

- (ii) Determine the value of V when $I = 0.8 \text{ A}$. Show on the graph how you determine value of V.
Tentukan nilai V apabila $I = 0.8 \text{ A}$. Tunjukkan pada graf bagaimana anda menentukan nilai V.

$$V = \underline{\hspace{2cm}}$$

[2 marks/markah]

- (b) Calculate the gradient, m of graph V against I.
 Show on the graph how you calculate the value of m.
Hitungkan kecerunan, m dari graf V melawan I.
Tunjukkan pada graf bagaimana anda menghitung nilai m.

$$m = \underline{\hspace{2cm}}$$

[3 marks/markah]

(c) The relationship between V and I is given by:

Hubungan antara V dan I diberi oleh:

$$E = V + Ir$$

Where,

Di mana,

E is the electromotive force

E ialah daya gerak elektrik

I is electric current

I ialah arus elektrik

V is potential difference

V ialah beza keupayaan

r is internal resistance

r ialah rintangan dalam

(i) Based on the graph in Diagram 2.1, determine E.

Show on the graph how to determine the value of E

Berdasarkan pada graf dalam Rajah 2.1, tentukan E.

Tunjukkan pada graf itu bagaimana menentukan nilai E

[2 marks/markah]

(ii) Using the $E = V + Ir$, find the value of internal resistance, r.

Menggunakan rumus $E = V + Ir$, cari nilai bagi rintangan dalam, r

[3 marks/markah]

(d) State one precaution that should be taken during this experiment.

Nyatakan satu langkah berjaga-jaga yang perlu diambil semasa eksperimen ini dilakukan.

.....

[1 mark/ markah]

[Lihat Sebelah

SULIT

Section B
Bahagian B

[12 marks]
[12 markah]

Answer any **one** questions from this section.
*Jawab mana-mana **satu** soalan daripada bahagian ini.*

3. Diagram 3.1 shows Aminah cycling her bicycle alone. Diagram 3.2 shows Aminah carries her sister with her bicycle. She find that it is difficult to stop her bicycle in the situation shown in diagram 3.2

Rajah 3.1 menunjukkan Aminah sedang mengayuh basikalnya dengan secara berseorangan. Rajah 3.2 menunjukkan Aminah sedang mengayuh dengan membawa adiknya. Dia dapati adalah lebih sukar untuk memberhentikan basikalnya dalam situasi yang ditunjukan dalam rajah 3.2.



Diagram 3.1 /Rajah 3.1



Diagram 3.2 /Rajah 3.2

Based on the information and observation:
Berdasarkan maklumat dan pemerhatian tersebut:

- (a) State **one** suitable inference. [1 mark/markah]

*Nyatakan **satu** inferens yang sesuai.*

- (b) State **one** suitable hypothesis. [1 mark/*markah*]
Nyatakan satu hipotesis yang sesuai.

- (c) With the use of apparatus such as a hacksaw blade, plasticine, and other apparatus, describe **one** experiment to investigate the hypothesis stated in 3 (b).

Dengan menggunakan radas seperti bilah gergaji, plastisin, dan radas lain, terangkan satu eksperimen untuk menyiasat hipotesis yang dinyatakan di 3(b).

In your description, state clearly the following:

Dalam penerangan anda, jelaskan perkara berikut:

- (i) The aim of the experiment.
Tujuan eksperimen.
- (ii) The variables in the experiment.
Pembolehubah dalam eksperimen.
- (iii) The list of apparatus and materials.
Senarai radas dan bahan.
- (iv) The arrangement of the apparatus.
Susunan radas
- (v) The procedure of the experiment which should include **one** method of controlling manipulated variable and **one** method of measuring the responding variable.

Prosedur eksperimen yang mesti termasuk satu kaedah mengawal pembolehubah dimanipulasikan dan satu kaedah mengukur pembolehubah bergerak balas.

- (vi) The way you tabulate the data.
Cara anda menjadualkan data.
- (vii) The way you analyse the data.
Cara anda menganalisis data.

[10 marks/*markah*]

4. Diagram 4 shows a boy was riding his bicycle along a dirt track at night. When he rode over a hillock, the speed of his bicycle decreased and bicycle lamp became dimmer. When he rode down the hillock, the speed of his bicycle increased and bicycle lamp became brighter.

Rajah 4 menunjukkan seorang budak sedang menunggang basikalnya di sepanjang satu trek tanah pada waktu malam. Apabila budak itu menaiki satu timbunan tanah, kelajuan basikalnya menjadi perlahan dan lampu basikalnya menjadi malap. Apabila dia menuruni timbunan itu, kelajuan basikalnya menjadi lebih laju dan lampu basikalnya menjadi lebih terang .

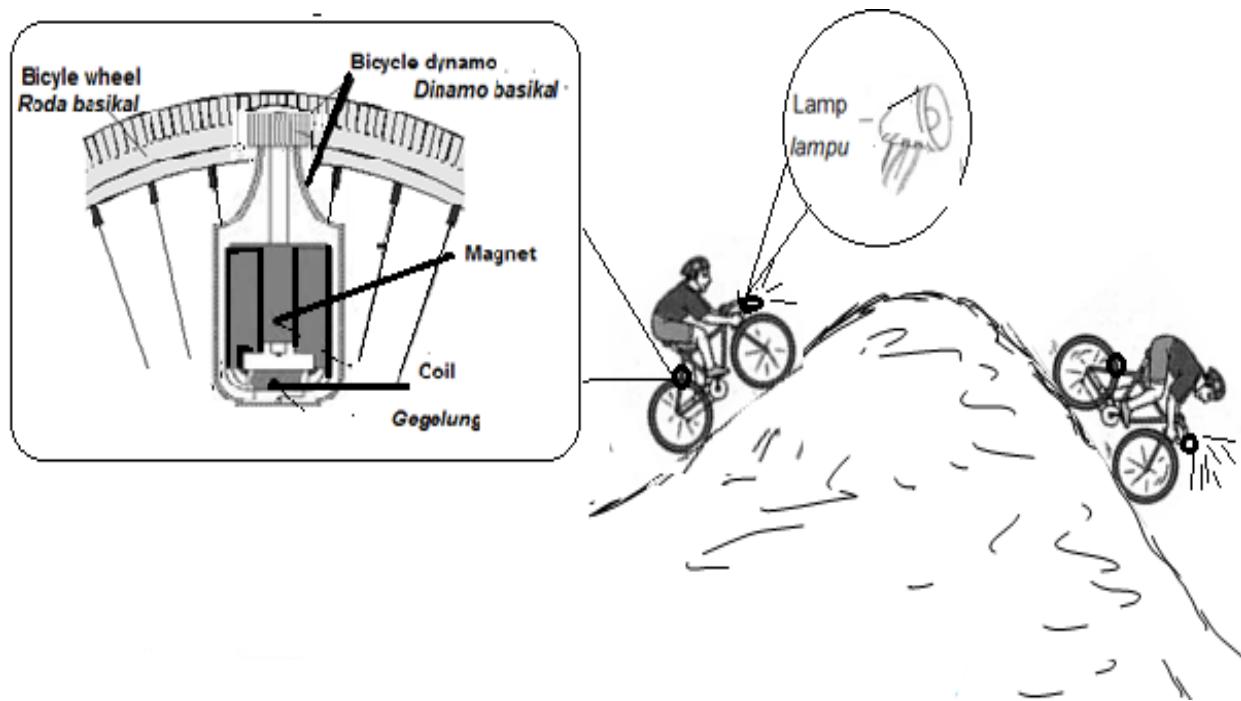


Diagram 4 / Rajah 4

Based on the information and observation:

Berdasarkan maklumat dan pemerhatian tersebut:

- (a) State **one** suitable inference. [1 mark/markah]
Nyatakan satu inferensi yang sesuai.
- (b) State **one** suitable hypothesis. [1 mark/markah]
Nyatakan satu hipotesis yang sesuai.

- (c) With the use of apparatus such as a bar magnet, a coil of a copper wire, and other apparatus, describe **one** experiment to investigate the hypothesis stated in 3 (b).

*Dengan menggunakan radas seperti bar magnet, gegelung dawai kuprum, dan radas lain, terangkan **satu** eksperimen untuk menyiasat hipotesis yang dinyatakan di 3(b).*

In your description, state clearly the following:

Dalam penerangan anda, jelaskan perkara berikut:

- (i) The aim of the experiment.
Tujuan eksperimen.
- (ii) The variables in the experiment.
Pembolehubah dalam eksperimen.
- (iii) The list of apparatus and materials.
Senarai radas dan bahan.
- (iv) The arrangement of the apparatus.
Susunan radas
- (v) The procedure of the experiment which should include **one** method of controlling manipulated variable and **one** method of measuring the responding variable.

*Prosedur eksperimen yang mesti termasuk **satu** kaedah mengawal pembolehubah dimanipulasikan dan **satu** kaedah mengukur pembolehubah bergerak balas.*

- (vi) The way you tabulate the data.
Cara anda menjadualkan data.
- (vii) The way you analyse the data.
Cara anda menganalisis data.

[10 marks/markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consist of two sections: **Section A** and **Section B**.
Kertas soalan ini mengandungi dua bahagian: Bahagian A dan Bahagian B.
2. Answer **all** questions in **Section A**. Write your answers for **Section A** in the spaces provided in the question paper.
Jawab semua soalan dalam Bahagian A. Jawapan anda bagi Bahagian A hendaklah ditulis pada ruang yang disediakan dalam kertas soalan ini.
3. Answer **one** question from **Section B**. Write your answers for **Section B** on the extra answer sheets. You may use equations, diagrams, tables, graphs and other suitable methods to explain your answers.
Jawab satu soalan daripada Bahagian B. Jawapan anda bagi Bahagian B hendaklah ditulis dalam helaian jawapan tambahan. Anda boleh menggunakan persamaan, rajah, jadual, graf dan cara lain yang sesuai untuk menjelaskan jawapan anda.
4. Show your working, it may help you to get marks.
Tunjukkan kerja mengira, ini membantu anda mendapatkan markah.
5. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.
Jika anda hendak menukar sesuatu jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. The marks allocated for each question or part question are shown in brackets.
Markah yang diperuntukkan bagi setiap soalan atau ceraian soalan ditunjukkan dalam kurungan.
8. You are advised to spend 60 minutes to answer questions in **Section A** and 30 minutes for **Section B**.
Anda dinasihati supaya mengambil masa 60 minit untuk menjawab soalan dalam Bahagian A dan 30 minit untuk Bahagian B.
9. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

**PEPERIKSAAN PERCUBAAN BERSAMA
SIJIL PELAJARAN MALAYSIA 2012**

ANJURAN



**MAJLIS PENGETUA
SEKOLAH MALAYSIA CAWANGAN PERLIS**

PHYSICS

PERATURAN PEMARKAHAN

Peraturan pemarkahan ini mengandungi **13** halaman bercetak

PAPER 1

1. A	11. D	21. B	31. A	41. C
2. D	12. A	22. A	32. B	42. B
3. C	13. A	23. C	33. C	43. B
4. B	14. C	24. D	34. A	44. A
5. D	15. A	25. C	35. C	45. C
6. C	16. B	26. A	36. C	46. A
7. B	17. C	27. B	37. D	47. C
8. A	18. C	28. B	38. B	48. C
9. A	19. B	29. B	39. B	49. A
10. C	20. C	30. B	40. C	50. C

PAPER 2**Section A**

Questions			MARKING CRITERIA	Marks	Total
1	(a)		H	1	1
	(b)	(i)	Voltmeter B	1	1
		(ii)	Senggatan lebih kecil	1	1
	(c)		Voltmeter measures electrical potential difference, while ammeter measures electrical current	1	1
					4
2	(a)	(i)	-Nucleus helium, $_2^2\text{He}$ // -2 proton, and 2 neutron	1 1	
		(ii)	-Excessive alpha particle exposure is harmful to living cells // -Long term alpha particle exposure is harmful to living cells	1 1	
		(iii)	-Mass reduction // -Po nucleus becomes more stable // -Po has less energy	1 1 1	
	(b)		28 x 2, twice half life = 56 years	1 1	2
					5
3	(a)		-Moving downward with increasing velocity -Constant positive acceleration	1 1	
	(b)	(i)	0 m/s	1	1
		(ii)	4 s	1	1
	(c)		$\frac{0 \text{ m/s} - 40 \text{ m/s}}{8 \text{ s} - 4 \text{ s}}$ - 10 m/s	1 1	
					2
					6
4	(a)	(i)	Y // Z	1 1	
		(ii)	$1000 \text{ kg/m}^3 \times 10 \text{ m/s}^2 \times 0.2\text{m}$ 2000 kg/ms^2	1 1	
					2

	(b)	(i)	Higher water pressure at the base // Wider dam is stronger	1																
		(ii)	Gravitational potential energy to Kinetic energy	1	1															
		(iii)	$mgh = \frac{1}{2} mv^2$, $10 \times 20 = \frac{1}{2} v^2$	1																
			$v = 20 \text{ m/s}$ (with unit)	1	2															
					7															
5	(a)	(i)	Absolute zero is....	1	1															
	(b)	(i)	Draw a Brownian particle motions with at least three change of direction	1	1															
		(ii)	-Air molecules hit box walls	1																
			-Air molecule kinetic energy exerted force towards walls	1	2															
		(iii)	Kinetic energy of air molecules increases	1	1															
	(c)		$pvt = 2.0 \times 10^5 \text{ Pa} \times 0.35\text{m}^3$	1																
			$= 5.0 \times 10^5 \text{ Pa} \times ?? \text{ m}^3$	1																
			0.14 m^3	1	3															
					8															
6	(a)	(i)	Electromagnet is a magnet by winding a coil of insulated wire a round iron core.	1	1															
		(ii)	P = north pole , Q = south pole	1	1															
	(b)	(i)	The flexible irons touched	1	1															
		(ii)	The lamp is on / shining / lighten up	1	1															
		(iii)	When the switch, S is on, the flexible irons touched each other, and the lamp lights up	1																
			When the switch, S is closed, the circuit with lamp and flexible irons is also closed	1	1															
	(c)	(i)	B to A	1	1															
		(ii)	According to Fleming,s right-hand rule. //	1																
			A change in the direction of force (become downwards)	1	1															
		(iii)	Use stronger magnets //	1																
			Increase the number of coil //	1																
			Increase the rotational speed of coil	1	1															
					8															
7	(a)	(i)	X : OR gates	1																
			Y : AND gates	1	2															
		(ii)	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td></td><td>P</td><td>Q</td></tr> <tr><td>0</td><td>0</td><td></td></tr> <tr><td>1</td><td>1</td><td></td></tr> <tr><td>1</td><td>0</td><td></td></tr> <tr><td>1</td><td>0</td><td></td></tr> </table>		P	Q	0	0		1	1		1	0		1	0		4	4
	P	Q																		
0	0																			
1	1																			
1	0																			
1	0																			
	(b)		Row I	1	1															
	(c)		Row III	1	1															
	(d)		Either door A or door B is opened and the master switch is also turned on	2	2															
					10															

8	(a)	(i)	-real -magnified	1	
		(ii)	Draw a straight line from Y to the intersection of the other two line with screen	1	1
		(iii)	-The image will be less bright	1	
			-Part of lens is covered so less light from object is refracted to the screen	1	2
	(b)	(i)	- $L_1 : 10 \text{ cm}$ - $L_2 : 5 \text{ cm}$	1	
		(ii)	- a complete line of PQ to image - a complete line of PS to image	1	
			- draw an image	1	3
		(iii)	$1/u + 1/v = 1/f$ $1/6 + 1/v = 1/10$ $V = 30 \text{ cm}$	1	
			$h/l = 30/6$ $h = 5 \text{ cm}$	1	2
					12
			Total Marks		60

SECTION B

NO	MARKING CRITERIA	MARK	
		SUB	TOTAL
9(a)(i)	The degree of hotness of an object	1	1
(ii)	- Quantity of water in figure 9.1 is more than in figure 9.2 -The ratio of land surface area to water in figure 9.1 is less than 9.2 -increase in water quantity will increase the tempeature of the water -increase in ratio of land to water will deasese the temperature -thermal equilibrium	1 1 1 1 1	5
(b)	-land have lower specific heat capacities compare to land -land are easily affected by change in temperature/temperature of land depend on the tempeature of the surrounding -less quantity of water in well contain less heat energy, it will easily transferred to land to achieve thermal equilibrium -larger quantity of water in lake contain larger heat energy.	1 1 1 1	4

	suggestion	explanation		
(C)	-build the house in a small village close to green area/higher ground	- a cooler surrounding will also cool the house	2	
	-build double storey house with a proper ceiling	-lower floor less expose to sunlight will be cooler, this will affect the upper floor through thermal equilibrium	2	
	-install a proper ventilation system	-to release the heat trapped in the house to the surrounding	2	
	-material use should be of higher heat capacities	-to avoid the house to increase in temperature during midday	2	
	-paint the house with white colour	-to reflect the heat	2	10
				20
10a)i	1. Bulbs are connected in parallel 2. Switch and battery are connected in series 3. Correct symbols for all components		1 1 1	3
(ii)	When the bulb is connected to a power supply of 1.5V, it will produce 3J of energy in 1 second		2	2
(iii)	The brightness of bulb B is the same as bulb C		1	1
(iv)	$P = IV$ $= 4 \times 1.5$ $= 6 \text{ W}$		2	2
(v)	Energy = Pt $= 12 \times 3600$ $= 43200 \text{ J}$		2	2

10(b)	suggestion	explanation		
-Low resistance of wire	- Resistance of wire is low to prevent power loss due to heat	2		
-High melting point	- Melting point is high to prevent the wire from melting	2		
-Low density wire	- Density wire is low to reduce the mass of wire / too heavy	2		
- Low rate of rusting	- Rate of rusting is low to prevent it from rusting easily	2		
-Rate of expansion of wire	- Rate of expansion of wire to prevent lengthening of wire	2	10	
				20

SECTION C

NO	MARKING CRITERIA	MARK																					
		SUB	TOTAL																				
11(a)(i)	<p>Refractive index of a medium is defined as:</p> $\text{Refractive index, } n = \frac{\text{speed of light in vacuum or air}}{\text{speed of light in the medium}}$ <p>It is an indication of the light-bending ability of the medium as the ray of light enters its surface from the air</p>	1	1																				
(a)(ii)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Characteristic</th> <th style="text-align: center; padding: 5px;">Explanation</th> <th style="text-align: center; padding: 5px;"></th> <th style="text-align: center; padding: 5px;"></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Higher refractive index</td> <td style="padding: 5px;">Inner core must have a higher refractive index than the outer cladding. Material with high refractive index also has a smaller critical angle, c.</td> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Lower density</td> <td style="padding: 5px;">The optical fibre will be lighter</td> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Should not contain impurity</td> <td style="padding: 5px;">Impurity absorbs light and causes the image to be blurred</td> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Strong but flexible</td> <td style="padding: 5px;">Strong optical fibres do not break easily. However, they should be flexible enough for their shape to change.</td> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;"></td> </tr> </tbody> </table>	Characteristic	Explanation			Higher refractive index	Inner core must have a higher refractive index than the outer cladding. Material with high refractive index also has a smaller critical angle, c.	2		Lower density	The optical fibre will be lighter	2		Should not contain impurity	Impurity absorbs light and causes the image to be blurred	2		Strong but flexible	Strong optical fibres do not break easily. However, they should be flexible enough for their shape to change.	2			
Characteristic	Explanation																						
Higher refractive index	Inner core must have a higher refractive index than the outer cladding. Material with high refractive index also has a smaller critical angle, c.	2																					
Lower density	The optical fibre will be lighter	2																					
Should not contain impurity	Impurity absorbs light and causes the image to be blurred	2																					
Strong but flexible	Strong optical fibres do not break easily. However, they should be flexible enough for their shape to change.	2																					

NO	MARKING CRITERIA	MARK	
		SUB	TOTAL
	The K type of glass is most suitable. It has a relatively high refractive index, n and a reasonably low density. It is pure, strong and flexible.	1 1	10
(b)	-Optical fibre transmits light along its axis, by the process of total internal reflection. -The fibre consists of an inner core of higher refractive index surrounded by a cladding layer of lower refractive index. -When the light ray enters the inner core at one end, it will propagate along the fibre from end to the other in a zigzag path and will undergo a series of total internal reflection	1 1 1	3
(c)(i)	$v = f\lambda$ Frequency, $f = v / \lambda = \frac{1.9 \times 10^8}{3.2 \times 10^7}$ $= 5.9 \times 10^{14} \text{ Hz}$	1 1	2
(c)(ii)	Refractive index, n $= \frac{\text{Speed of light in vacuum or air}}{\text{Speed of light in the medium}}$ $= \frac{3.0 \times 10^8}{1.9 \times 10^8}$ $= 1.58$	1 1	2
(d)	- Thinner and lighter - Cheaper than copper cables - High quality transmission over long distances with little signal loss - Capable of carrying many more signals at the same time - Signals are not affected by electric and magnetic fields (Any two)	2	2
			20
12(a)	- The alternating loud and soft sounds are caused by the interference of the sound waves. - The loud sounds are produced by constructive interference, whereas the soft sounds are produced by destructive interference	1 1	2

NO	MARKING CRITERIA	MARK											
		SUB	TOTAL										
(b)(i)	1. The distance of the path from the sound source (loudspeakers), D is increased. 2. The frequency of the audio signal generator is decreased. The wavelength of the sound wave is increased. 3. The distance between the two loudspeakers, a is reduced	1 1 1	3										
(b)(ii)	$\lambda = ax / D$ $= \frac{1.5 \times 1.5}{8}$ $= 0.28 \text{ m}$	1 1	2										
(c)	<table border="1"> <thead> <tr> <th>Characteristics</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>The wall barrier is built with a gap</td> <td>The water waves will be reflected and ship can enter into the harbour</td> </tr> <tr> <td>The depth of the harbour is deep</td> <td>So heavier ships can go through into the harbour</td> </tr> <tr> <td>The gap between the barriers is small</td> <td>The energy of the waves can be reduced, thus waves of smaller amplitude is produced</td> </tr> <tr> <td>The base of the wall barrier is large</td> <td>It can withstand high pressure at the bottom of the sea</td> </tr> </tbody> </table> <p>The most suitable design is S. The wall barrier has a gap, the depth of the sea at the harbour is deep, the gap between the wall barriers is small and the base of the wall barrier is large.</p>	Characteristics	Explanation	The wall barrier is built with a gap	The water waves will be reflected and ship can enter into the harbour	The depth of the harbour is deep	So heavier ships can go through into the harbour	The gap between the barriers is small	The energy of the waves can be reduced, thus waves of smaller amplitude is produced	The base of the wall barrier is large	It can withstand high pressure at the bottom of the sea	2 2 2 2 1 1	10
Characteristics	Explanation												
The wall barrier is built with a gap	The water waves will be reflected and ship can enter into the harbour												
The depth of the harbour is deep	So heavier ships can go through into the harbour												
The gap between the barriers is small	The energy of the waves can be reduced, thus waves of smaller amplitude is produced												
The base of the wall barrier is large	It can withstand high pressure at the bottom of the sea												
(d)(i)	$v = s / t$ $s = vt = 1500 \times 0.05 = 75 \text{ m}$ Thus the depth = $75 / 2 = 37.5 \text{ m}$	1	1										
(d)(ii)	$v = f\lambda$ $\lambda = v / f = \frac{1500}{80\ 000} = 0.02 \text{ m}$	1 1	2										
			20										

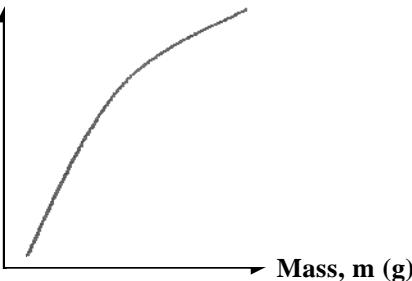
PAPER 3**SECTION A**

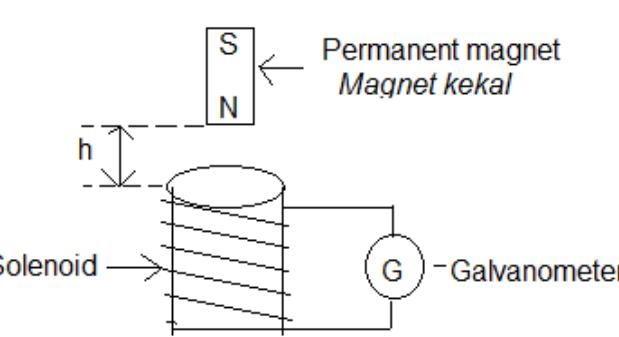
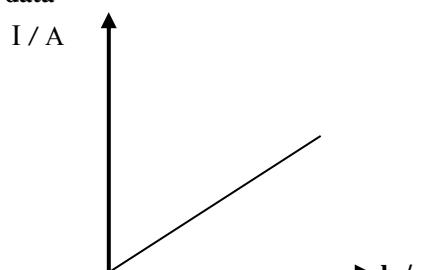
NO	MARKING CRITERIA	MARK																			
		SUB	TOTAL																		
1(a)(i)	State the correct manipulated variable Mass, m	1	1																		
(ii)	State the correct responding variable height, h	1	1																		
(iii)	State one fixed variable Cross sectional area // type of the liquid // density of the liquid	1	1																		
(b)	Tabulate m_1, m, and h correctly																				
	<table border="1"> <thead> <tr> <th>m_1/g</th> <th>m/g</th> <th>h/cm</th> </tr> </thead> <tbody> <tr><td>50.0</td><td>100.0</td><td>1.6</td></tr> <tr><td>100.0</td><td>150.0</td><td>2.0</td></tr> <tr><td>150.0</td><td>200.0</td><td>2.4</td></tr> <tr><td>200.0</td><td>250.0</td><td>2.8</td></tr> <tr><td>250.0</td><td>300.0</td><td>3.2</td></tr> </tbody> </table>	m_1/g	m/g	h/cm	50.0	100.0	1.6	100.0	150.0	2.0	150.0	200.0	2.4	200.0	250.0	2.8	250.0	300.0	3.2		
m_1/g	m/g	h/cm																			
50.0	100.0	1.6																			
100.0	150.0	2.0																			
150.0	200.0	2.4																			
200.0	250.0	2.8																			
250.0	300.0	3.2																			
	m_1 , m , and h shown in table with correct units.	1																			
	Value of m_1 shown in a table	1																			
	All value of m correct	1																			
	All value of m_1 and m consistent to 1 d.p.	1																			
	All value of h correct	2																			
	All value of h consistent to 1 d.p.	1	7																		
(c)	Draw correctly a graph of a against h h at the y -axis, m at the x -axis and correct units at both axes	1																			
	Uniform scale at both axes	1																			
	5 points plotted correctly [Note : 3 or 4 points plotted correctly give 1 m]	2																			
	Best straight line	1	5																		
(d)	States the correct relationship based on the straight line drawn Height of the liquid is increases linearly to the mass	1	1																		
			16																		

NO	MARKING CRITERIA	MARK	
		SUB	TOTAL
2(a)(i)	State the correct relationship between V and x V decreases linearly with I	1	1
(ii)	Draws the interpolation line from $I = 0.8 \text{ A}$ to the graph the V - axis	1	
	States the correct value and its unit of the voltage 1.52 V	1	2
(b)	Draw large triangle	1	
	Showing the correct calculation - $\frac{1.04}{0.7}$	1	
	Answer with correct unit - $1.49 \text{ VA}^{-1} (\Omega)$	1	3
(c)(i)	Draws the intercept of V-axis	1	
	Answer with correct unit 3.0 V	1	2
(ii)	Rearrange the equation $V = -Ir + E$ Gradient, $m = -r$	1 1	
	Answer with correct unit 1.49 Ω	1	3
(d)	State one suitable precaution All wire connections must be tightly fixed // turned off the switch while not taking any reading	1	1
			12

SECTION B

NO	MARKING CRITERIA	MARK	
		SUB	TOTAL
3(a)	Making the right inference Time taken for the object to stop moving is influenced by the mass	1	1
(b)	Building an appropriate hypothesis The bigger the mass, the longer the object will move	1	1
(c)(i)	Stating the aim of the experiment To investigate the relationship between mass and period of oscillation	1	
(ii)	Stating the correct variables Manipulated variable : the mass of the plasticine Responding variable : the period of oscillation Fixed variable : the length of the hacksaw blade / the number of oscillation	1	1
(iii)	List of appropriate apparatus and material Hacksaw blade, stopwatch, plasticine, three beam balance, G-clamp and ruler.	1	
(iv)	Describing set up of the apparatus Draws a labeled and functional diagram of the set up of the apparatus	1	
(v)	State how the manipulated variable is controlled The saw blade was clamped in horizontal position. A 50g plasticine was attached at the end of the saw blade. State how the responding variable is measured The plasticine was displaced to right/left at small angle and released The time taken for 20 complete vibrations was recorded The time for one complete vibration, period, $T=t/20$ was calculated	1	1
	State how the procedure is repeated to obtain at least 5 sets of results The experiment was repeated using different masses such as 60g, 70g, 80g and 90g.	1	

NO	MARKING CRITERIA	MARK																			
		SUB	TOTAL																		
(vi)	Tabulating data <table border="1"> <thead> <tr> <th>Mass, m / g</th> <th>Time taken for 20 complete vibration, t / s</th> <th>Period, $T = t/20 (s)$</th> </tr> </thead> <tbody> <tr><td>50</td><td></td><td></td></tr> <tr><td>60</td><td></td><td></td></tr> <tr><td>70</td><td></td><td></td></tr> <tr><td>80</td><td></td><td></td></tr> <tr><td>90</td><td></td><td></td></tr> </tbody> </table>	Mass, m / g	Time taken for 20 complete vibration, t / s	Period, $T = t/20 (s)$	50			60			70			80			90			1	
Mass, m / g	Time taken for 20 complete vibration, t / s	Period, $T = t/20 (s)$																			
50																					
60																					
70																					
80																					
90																					
(vii)	Analysing data 	1	10																		
			12																		
4(a)	Making the right inference The brightness of the lamp is influenced by the speed of the magnet in a coil	1	1																		
(b)	Building an appropriate hypothesis The magnitude of the induced current increases, the speed of the magnet increases	1	1																		
(c)(i)	Stating the aim of the experiment To investigate the relationship between the speed of the magnet and the magnitude of the induced current	1																			
(ii)	Stating the correct variables Manipulated variable : The height of the magnet Responding variable : The reading of the Galvanometer	1																			
	Fixed variable : The strength of the magnet / the number of turns in the coil	1																			
(iii)	List of appropriate apparatus and material Bar magnet, cardboard tube, Galvanometer, insulated copper wire, retort stand, metre rule.	1																			

NO	MARKING CRITERIA	MARK															
		SUB	TOTAL														
(iv)	<p>State a functional arrangement of the apparatus Draws a labeled and functional diagram of the set up of the apparatus</p> 	1															
(v)	<p>State how the manipulated variable is controlled</p> <ul style="list-style-type: none"> A solenoid of 50 turns by winding an insulated copper wire round a cardboard is connected to a galvanometer A small bar magnet is hold at a height of $h = 5\text{ cm}$ above the top of the solenoid <p>State how the responding variable is measured The magnet is dropped into the solenoid and the deflection of the galvanometer as the induced current, I is recorded.</p> <p>State how the procedure is repeated to obtain at least 5 sets of results Repeat the experiment by changing the value of the height, h to 10cm, 15cm, 20cm, 25cm and 30cm.</p>	1	1														
(vi)	<p>Tabulating data Show table with h / cm and I / A as headings</p> <table border="1"> <thead> <tr> <th>height of the magnet, h / cm</th><th>induced current, I / A</th></tr> </thead> <tbody> <tr><td>5.0</td><td></td></tr> <tr><td>10.0</td><td></td></tr> <tr><td>15.0</td><td></td></tr> <tr><td>20.0</td><td></td></tr> <tr><td>25.0</td><td></td></tr> <tr><td>30.0</td><td></td></tr> </tbody> </table>	height of the magnet, h / cm	induced current, I / A	5.0		10.0		15.0		20.0		25.0		30.0		1	
height of the magnet, h / cm	induced current, I / A																
5.0																	
10.0																	
15.0																	
20.0																	
25.0																	
30.0																	
(vii)	<p>Analysing data</p> 	1	10														
			12														

PERATURAN PEMARKAHAN TAMAT

<http://edu.joshuatly.com/>
<http://fb.me/edu.joshuatly>